

ARCC Teacher Compensation Initiative: Literature Review

August 2014

**Submitted to the
Tennessee State Board of Education
and the
Tennessee Department of Education**

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Executive Summary

Overview. In February 2014, the Tennessee State Board of Education (SBE) requested that the Appalachia Regional Comprehensive Center (ARCC) provide assistance to the SBE's Basic Education Program (BEP) Review Committee. The request came in response to the BEP Review Committee's 2013 *Annual Report*, which discussed competitive, market-based teacher pay. The SBE requested additional information on the use and effectiveness of market-based teacher compensation and market-based incentives by districts and states to recruit science, technology, engineering, and mathematics (STEM) teachers. The SBE is interested in using this information to encourage school districts to align teacher salaries with the salaries offered by competing employers to improve teacher recruitment and retention in Tennessee, particularly in areas of shortage.

As a federally funded technical assistance center that serves state education agencies (SEAs) in Tennessee, Kentucky, Virginia, and West Virginia, ARCC's key objective is to provide high-quality, relevant, and useful technical assistance that enhances specific SEA capacities to successfully implement and sustain important education reforms. In response to the request for information from the SBE, ARCC consulted with the Center on Great Teachers and Leaders (GTL Center), one of the seven content centers in the Comprehensive Center network, to supply research and provide feedback on a review of the report. Identifying a lack of evidence about the impact and costs of such initiatives, GTL Center staff also conducted informal interviews with leaders of emerging market-based compensation initiatives to seek additional, unpublished information. Given these methods, findings in this report should be considered descriptive and limited by the relatively few market-based incentive programs currently underway; additional studies, to be published in autumn 2014, should shed further light on this important topic.

The report includes (1) background information on the BEP Review Committee and the history of teacher compensation reforms in Tennessee, (2) a summary of the literature and evidence on the effectiveness of market pay, and (3) examples of emerging practices, challenges, and lessons learned to support the committee's decision-making.

Tennessee's teacher compensation policy background. Tennessee has long been a leader in innovative teacher compensation policy, active in this arena for three decades, as described below:

- Contemporary teacher compensation reform began in Tennessee in 1984, with the introduction of teacher career ladders under the Tennessee Comprehensive Education Reform Act.
- In 2007, the SBE developed guidelines for local educational agencies (LEAs) to submit plans that would offer loan forgiveness strategies, fellowships, salary supplements, and/or signing bonuses to address one of the following areas: (1) recruiting teachers to hard-to-staff schools, (2) recruiting new teachers, (3) filling LEA-specific academic shortage areas, and (4) retaining effective teachers. The specific salary initiatives were to be determined based on teacher supply and demand data.
- Teacher compensation reform accelerated under Tennessee's First to the Top legislation and the award of a first round Race to the Top Grant in 2010, supplemented by 2010 and 2012 Teacher Incentive Fund grants from the U.S. Department of Education.
- Most recently, in 2013, Tennessee asked districts statewide to submit differentiated pay plans for the 2014-2015 school year, according to SBE guidelines, and the Tennessee Department of Education will begin to enforce implementation of those plans in 2014-2015.

Impact of Tennessee's prior teacher pay reforms and on-going needs. As demonstrated above, Tennessee has experimented with numerous forms of alternative compensation, including performance-based differentiated salary initiatives. The extent to which these programs have improved the quality of education that students have received in Tennessee is not yet known, due to a lack of systematic evaluation. Moreover, despite three decades of experimentation with teacher compensation reform, teacher recruitment, attrition, motivation, and morale continue to present challenges.

For example, the following subject areas were identified by the U.S. Department of Education (2014) as 2014-2015 areas of teacher shortage in Tennessee:

- Mathematics (Grades 7-12),
- Science (Grades 7-12),
- Special Education (Kindergarten-Grade 12),
- World Languages (Grades 7-12),
- English as a Second Language (Pre-Kindergarten-Grade 12),
- English (Grades 7-12), and
- Social Studies (Grades 7-12).

Whether these shortages stem from supply or demand factors is not entirely clear, because of the limitations of the available data. The data indicate that, of approximately 5,000 individuals who complete teacher preparation programs in Tennessee each year, about half remain in Tennessee and are teaching in schools within one year; however, the percentage of teachers who continue in the classroom declines over time (Tennessee Higher Education Commission and Tennessee State Board of Education (SBE), 2013).

Meanwhile, a recent report found that between the school years of 2011-2012 and 2012-2013, eight percent of teachers left Tennessee's public schools and ten percent moved to another Tennessee school. Teachers from minority backgrounds were considerably more likely to leave, and teachers new to the profession and teachers with lower evaluation ratings were slightly more likely to leave, with significant variation in attrition rates across school districts (Tennessee Department of Education, Office of Policy and Research, 2014). However, given the limitations of the available supply and demand data, drawing judgments about the adequacy of teacher supply to meet demand in specific subjects and specific high-need schools was not possible in this report.

One data point worth considering is that, according to the Alliance for Excellent Education (Haynes, 2014), teacher attrition from the profession costs Tennessee somewhere in the range of \$23 million to more than \$50 million per year, depending on how it is calculated.

Market-based teacher compensation across the nation. Although an early adopter and leader, Tennessee is not alone in thinking about how to strategically use teacher compensation as a vehicle to strengthen the state's teaching force and schools. Over half of the states in the nation had mandated or implemented a pilot or full career ladder program in the 1980s; however, only four states still operated these programs by the mid-1990s, due to high costs, reduced teacher cooperation in reaction to a more competitive environment, and difficulty in measuring the success of the programs (Wesson, 2013).

In recent years, Georgia, Ohio, and Virginia have implemented new teacher compensation initiatives specifically focused on recruiting and retaining effective teachers in STEM fields. In Georgia, \$9.59 million was allocated in 2009 for a STEM teacher differentiated salary program. In Ohio, \$4 million was allocated in 2007 for a STEM and foreign language teacher bonus program and \$2.5 million for a STEM teacher loan forgiveness program. In Virginia, \$500,000 was allocated in 2013 to 100 teachers in 50 districts across the state and \$708,000 in 2014 for a pilot program of STEM Teacher Recruitment

and Retention Incentive Awards. In these states, the estimated incentives per year per teacher are in the range of \$4,000-\$6,500.

By and large, no one has conducted rigorous studies of the impact of these initiatives. The evaluations that have been conducted are not publicly available. Some states have begun to commission research to collect more evidence about the effectiveness of these efforts. For example, the Hawaii Department of Education recently issued a request for proposals to study the adequacy of their teacher compensation system to meet teacher recruitment and retention goals, and Oklahoma issued a request for proposals to study teacher supply and demand, including the implications for teacher pay. In Missouri, the state is developing a teacher shortage prediction model based on data collected on teacher recruitment and retention (Center on Great Teachers and Leaders, personal communication, 2014).

Smaller in scope and still in the early phases of implementation and revision, the most unique, new approaches to market-based teacher pay include:

1. *Douglas County School District (Colorado)*. Beginning in the 2012-2013 school year, the Douglas County School District introduced a new, controversial market-based teacher pay system that groups each subject area and grade into one of five salary bands, based on the labor market. Specifically, subjects/grades with a surplus of teachers are assigned to lower salary bands, and subjects/grades with teacher shortages are assigned to higher salary bands. The placement into bands may fluctuate from year to year, but at present, for example, special education and school psychologists are in the highest paying band, with high school science and math teachers in the second highest band.
2. *The Equity Project Charter School (New York City)*. In 2009, The Equity Project Charter School was established and adopted three R's for teachers: rigorous qualifications, redefined expectations, and revolutionary compensation. To deliver on the latter, teachers receive salaries of \$125,000 and a bonus of up to \$25,000, based on school-wide performance. The school's website includes information about student growth, learning environment survey results, the school's annual report to the New York City Department of Education, and the school's audited financial statements.
3. *Opportunity Culture Model*. Public Impact's Opportunity Culture Model, piloted in Metro Nashville Public Schools' Innovation Zone, is estimated to increase the pay

for effective teachers by 130 percent within existing budgets. The budget for pay increases is generated through differentiated roles, including paraprofessionals, academic resource teachers, and teacher leaders. These roles simultaneously create restructured professional growth and career opportunities based on teachers' strengths, leadership skills, reach, and impact on student achievement. The staffing models are intended to increase the selectivity of teachers who enter the profession, create opportunities for advancement, and increase teacher pay to six figures.

The research. At present, there is little impact evidence for the market-based pay programs noted above. The research on performance-based teacher pay programs has produced highly mixed results. Research about teacher salaries more generally, however, continues to suggest that salaries affect the labor market decisions that teachers make. Both the survey research (which asks teachers whether and why they chose to join or leave the teaching profession, or planned to join or leave) and econometric literature (which reports on observed changes in teacher recruitment or attrition as these relate to teachers' salaries) suggest that salaries matter.

When it comes to recruiting talent to the profession, research finds that teachers' salaries are "painfully" low in many states, including Tennessee, causing teachers to qualify for state benefits and work second jobs (Boser & Straus, 2014). Research also finds that higher salaries would make teaching a more viable career option for math and science majors in college (Milanowski, 2003) and for high-performing college students from the top-third of their college classes (Auguste, Kihn, & Miller, 2010). More generally, salaries emerge as:

- one of the primary sources of dissatisfaction that led former teachers to move to another school or leave the profession (Ingersoll, 2003);
- one of the primary factors that teachers found to be more satisfying in subsequent careers than in teaching (Keigher & Cross, 2010);
- among the primary factors that, if improved, could encourage teachers who were contemplating leaving the profession to remain; and
- among the top-rated changes that would improve the quality of the teaching profession (Coggshall, Ott, Behrstock, & Lasagna, 2009).

Salaries also ranked among the top "dislikes" for top-performing "irreplaceable" teachers (TNTP, 2013), and as an area where a significant majority of teachers believe improvements would strengthen teacher retention (Scholastic and the Bill & Melinda

Gates Foundation, 2012). A meta-analysis of econometric studies finds that salaries appear to have an impact on teacher retention (Borman & Dowling, 2008). The impact of teacher salaries on the performance of their students, however, is mixed (Hanushek & Rivkin, 2004; Figlio, 2002; Loeb & Page, 2000).

Research on how teachers view differentiated salaries suggests that teachers are most supportive of higher pay for teachers in high-need locations, somewhat supportive of higher pay for teachers in shortage subject areas and teachers who achieve National Board certification, with the least support for higher salaries for teachers who perform well on evaluations (Podgursky, 2011; Coggshall et al., 2009).

Several recent and notable studies include:

1. The Tennessee Consortium on Research, Evaluation, and Development found that Level 5 (i.e., the most effective) teachers, who received bonuses to work in Tennessee Priority Schools (i.e., the 5 percent most high-need schools), were 23 percent more likely to remain in a Priority School after receiving a \$5,000 bonus than were Level 4 teachers in those schools. The impact of the bonuses seemed only to apply to teachers in tested grades and subjects, however (Springer, Rodriguez, & Swain, 2014).
2. Examining Washington, D.C.'s IMPACT initiative in a similar manner, Dee and Wyckoff (2013) found that \$25,000 bonuses and \$27,000 base salary increases did not have a statistically significant impact on teacher retention (although the authors note contextual factors that may have contributed to this outcome) but did, however, have positive and statistically significant effects on teacher performance.
3. Mathematica examined the impact of \$20,000 bonuses paid over two years to effective teachers who transfer to and stay in low-performing schools. Looking at such policies in 10 school districts across seven states, Mathematica found that retention of effective teachers in these schools was significantly higher (93 percent compared to 70 percent for those who did not receive bonuses), but this effect disappeared after the two-year bonus period ended, and few teachers took advantage of the bonus offer (Glazerman, Protik, Teh, Bruch, & Max, 2013).

Mathematica will publish two important and relevant studies within several months: (1) a study of the preliminary impact of Teacher Incentive Fund grants; and (2) a five-year study of The Equity Project charter school in New York City.

Conclusion. Teacher compensation reform is complex and challenging. But the evidence suggests, on the whole, that salaries do matter for teacher recruitment and retention and, thus, it is laudable that Tennessee continues to examine possibilities for improving teacher pay, particularly for teachers in shortage areas. Lessons learned from past compensation reforms suggest that such efforts are most successful when they involve a pilot test and are modified based on the results of the pilot evaluation, are combined with additional improvements to the human capital management system (e.g., working conditions, strategic recruitment and hiring), involve all stakeholders, and feature salary enhancements significant enough to affect teachers' career choices.

Section I: Introduction

In February 2014, staff from the Tennessee State Board of Education (SBE) requested that the Appalachia Regional Comprehensive Center (ARCC) provide assistance to its Basic Education Program (BEP) Review Committee. SBE made its request in response to the BEP Review Committee's 2013 Annual Report, which discussed competitive, market-based teacher pay. SBE staff requested additional information about the use and effectiveness of market-based teacher compensation and market-based incentives for science, technology, engineering, and mathematics (STEM) teachers by districts and states. Market-based pay is defined as the alignment of teachers' salaries with the salaries available in other labor markets. It suggests that salaries offered by competing employers should be a central consideration when setting pay levels for teachers as a population, and within particular subjects or geographic areas. (Please refer to the glossary for definitions of additional terms used throughout this report.)

This request is also related to the Tennessee SBE Teacher Compensation Initiative, part of the ARCC's Year Two Plan. The ARCC, a federally funded technical assistance center, serves state education agencies (SEAs) in Tennessee, Kentucky, Virginia, and West Virginia. ARCC's key objective is to provide high-quality, relevant, and useful technical assistance that enhances specific SEA capacities to undertake state education reforms successfully, support district and school implementation of reforms, and maintain effectiveness once services are complete.

Preparation of Report

To prepare this report, ARCC staff collaborated with staff from the Center on Great Teachers and Leaders (GTL Center) (<http://www.gtlcenter.org/>) to conduct a review of research and obtain additional information on teacher compensation and market-based pay at the state and district levels. The GTL Center is a federally funded national content center dedicated to supporting state education leaders in their efforts to grow, respect, and retain great teachers and leaders for all students. Specifically, as part of the U.S. Department of Education's [Comprehensive Centers](#) program, the GTL Center provides technical assistance and online resources to regional centers and SEAs designed to build systems that:

- support the implementation of **college and career standards**;
- ensure the **equitable distribution** of effective teachers and leaders;

- recruit, retain, reward, and support **effective educators**;
- develop coherent **human capital management** systems;
- create **safe academic environments** that increase student learning through positive behavior management and appropriate discipline; and
- use **data** to guide professional development and improve instruction.

Staff based the contents of this report on information collected from the websites of Tennessee organizations, the research/literature on teacher compensation and market-based pay, the websites of other states and districts exploring teacher compensation reform, and from national organizations.

As part of the preparation process, ARCC and GTL Center staff made two presentations to staff from the Tennessee SBE and the Tennessee Department of Education (TDOE):

- a webinar on May 7 to examine the Denver Public Schools Professional Compensation System, an example of a long-standing and well-researched alternative compensation system (additional written information was provided in response to questions on May 16); and
- a webinar on June 1 to explore several teacher compensation reforms, featuring compensation innovations by districts and three states, including recent initiatives addressing recruitment and retention of STEM teachers through salary enhancements.

Purposes of Report

The purposes of this report are to:

- follow up on the 2013 BEP Review Committee's discussion and annual report on teacher compensation and market pay;
- provide brief background information on the BEP Committee and the history of teacher compensation reforms in Tennessee for the 2014 BEP Review Committee to take into consideration; and
- present the literature and evidence on the effectiveness of market pay as well as examples of emerging practices, challenges, and lessons learned to support the Committee's decision-making and build its capacity to make informed decisions based on the latest information.

Organization of Report

Section II. Key Findings and Recommendations from the 2013 BEP Review

Committee Discussions and Decisions. This section summarizes the history of the Basic Education Program, the BEP Review Committee and annual report, and the 2013 Annual Report, in order to provide background for the remainder of the report.

Section III. Tennessee Compensation Reform Context. This section provides an overview of the history of Tennessee teacher compensation reforms from 1984 to the present, including career ladders, First to the Top, and differentiated pay plans.

Section IV. Evidence on Teacher Supply and Demand in Tennessee. This section provides a high-level overview of the evidence on teacher supply and demand in Tennessee to address the question of whether salary reform is necessary and, if so, whether these reforms should focus on certain subject or geographic area shortages.

Section V. The Research Base on Market-Based Teacher Pay. This section summarizes responses to questions about the survey and econometric research related to market-based teacher pay.

Section VI. Emerging Practices and Lessons Learned By States and Districts. This section describes the implementation of market-based pay and related salary reforms by other states and districts, and the lessons learned about the costs, impact, and characteristics of the new teacher pay policies.

Section VII. Practical Questions and Considerations. This section summarizes key practical questions that any district or state considering compensation reform should take into account, elaborating on two considerations: (1) funding teacher compensation reform, and (2) meaningful stakeholder engagement in compensation reform. It concludes with a model for engaging teacher voice organizations as one possible way forward for teacher compensation reform in Tennessee.

Section II: Key Findings and Recommendations from the 2013 BEP Review Committee Discussions and Decisions

Introduction

This section provides a brief history of Tennessee's BEP, the BEP Review Committee, and its annual report. It includes a summary from the 2013 BEP Annual Report that focuses on teacher compensation and market pay.

History of the BEP

In 1992, the Tennessee General Assembly passed the Education Improvement Act, which increased funding for K-12 education and created the BEP to be a vehicle for equitably allocating funding to school districts. The act was implemented after the Tennessee Supreme Court directed the state to develop a better plan to fund education in Tennessee. The BEP is the funding formula through which state education dollars are generated and distributed to Tennessee public schools. Phased in over six years beginning in the 1992-1993 school year, BEP reached full funding during the 1997-1998 school year (see Tennessee SBE website on BEP).

BEP Review Committee and Annual Report

Tennessee Code Annotated Section 49-1-302(4) (a) specifies that the SBE should establish a review committee for the BEP. The charge for the committee is as follows:

The BEP review committee shall meet at least four (4) times a year and shall regularly review the BEP components, as well as identify needed revisions, additions, or deletions to the formula. The committee shall annually review the BEP instructional positions component, taking into consideration factors including, but not limited to, total instructional salary disparity among LEAs, differences in benefits and other compensation among LEAs, inflation, and instructional salaries in states in the southeast and other regions. The committee shall prepare an annual report on the BEP and shall provide the report on or before November 1 of each year, to the governor, the State Board of Education, the education committee of the Senate and the education committee of the House of Representatives. This report shall include recommendations on needed revisions, additions, and deletions to the formula as well as an analysis of instructional

salary disparity among LEAs, including an analysis of disparity in benefits and other compensation among LEAs.

The BEP Review Committee issued its annual report on November 1, 2013. The report included recommended revisions, additions, and deletions to the formula, as well as an analysis of instructional salary disparity among local educational agencies (LEAs). The report considered total instructional salary disparity among LEAs, differences in benefits and other compensation among LEAs, inflation, and instructional salaries in the southeast and other regions.

One report recommendation focused on improving teacher compensation and market pay:

BEP Formula Improvement #2: Recommendation for Improving Teacher Compensation

In an effort to meet the goal of becoming the fastest improving state in the nation in terms of student achievement, the BEP Review Committee recognized the need to create an environment that is attractive to highly effective teachers. Compensation is an integral component to creating this environment. Therefore, the BEP Review Committee supports Governor Haslam's goal of becoming the fastest improving state in teacher salaries during his time in office and increasing the BEP salary component accordingly. The BEP Review Committee also suggests that concurrent with this accelerated rate of teacher salary growth, the state consider conducting a market compensation analysis of career opportunities that compete for college student and teacher retention. We believe that to meet the student academic outcomes necessary to attain our Pre-K to Job goals, recruiting and retaining teachers into education rather than other occupations is essential for success. Additionally, market analysis may be helpful to districts as they consider differentiated compensation models. (Tennessee SBE, BEP Review Committee, 2013, pp. 5, 17-18).

Over the course of the 2013 meetings, the BEP committee discussed the issue of competitive teacher compensation and its relationship to recruiting and retaining teachers. Some committee members expressed the opinion that teacher salaries were too low, but without consensus about what constitutes "competitive" compensation. The committee reached a definition of competitive compensation as compensation that would allow the state to recruit teachers of the quality or caliber that would allow Tennessee to meet achievement goals, retain great teachers, and reward professionals for high performance (Tennessee SBE, BEP Review Committee, 2013, p. 37).

The ongoing discussion about adequate teacher compensation was based on three themes (Tennessee SBE, BEP Review Committee, 2013, pp. 37-38):

1. What should the minimum entry wage be to attract college students with the problem solving, communications, critical thinking, reading, analytical thinking, leadership, and other skills necessary to achieve success in virtually any field? Specifically, what type of entry level salary would be necessary to attract to the field of teaching those with the skills to enter any career?
2. Given the new and higher standards for K-12, an acute need is anticipated for those with mastery level skills in the subjects of math and science. What entry level salaries would be needed to attract college students with specific mastery in these subjects, considering the higher entry level salaries in specialized fields such as chemistry and physics?
3. Once the entry level salaries are calculated and a sum total determined, the next step would be to compare that number to the current total for compensation (salary and benefits), determine the gap between the current and proposed compensation, then determine how to close the gap.

Section III: Tennessee Compensation Reform Context

Introduction

The purpose of this section is to provide the BEP Review Committee with background information on teacher compensation in Tennessee. The first part of this section briefly describes the current salary schedule for teachers in Tennessee and the percentages of school expenditures spent on instruction.

The second part of this section provides an overview of teacher compensation reforms since 1984. It briefly describes the history of Tennessee reforms, beginning with the career ladder exploration under the Tennessee Comprehensive Education Reform Act. Next, it explains salary equity plans and the addition of teacher salaries to the purview of the BEP. Third, it presents an overview of the implementation of differentiated pay plans from 2007 to the present day, including funding from the Race to the Top grant, competitive compensation initiatives, and the Tennessee Teacher Incentive Fund (TIF) grants.

The 2013 BEP Annual Report recommendations build off several decades of teacher compensation reform in Tennessee that include experimentation with teacher career ladders (the first in the nation), salary equity, performance-based compensation, and differentiated pay. Recognizing Tennessee's leadership in teacher compensation reform, the U.S. Department of Education awarded several TIF grants to support the state's efforts. The current BEP recommendations expand upon these prior efforts, taking account of past lessons learned from a variety of approaches to improving teacher compensation.

Current Salary Schedule for Teachers in Tennessee

Tennessee, like approximately half the states in the U.S., sets a minimum salary schedule for teachers, and sets it annually—one of 10 states that does so (Wesson, 2013). State law (Tennessee Code Annotated §49-3-306) requires the Commissioner of Education to formulate a table of training (graduate degrees or credit hours earned) and experience factors (each year of service) for a state salary schedule that the SBE must approve (Wesson, 2013). Each school district is required to establish a local salary schedule for all licensed personnel that meets the state's minimum; school districts are allowed to supplement salaries from local funds. Most Tennessee districts have schedules that

exceed the state minimum; approximately 18 districts use schedules equivalent to, or only slightly above, the state minimum (Brown, 2012, as cited in Wesson, 2013). Seventeen states (including Tennessee) require districts to pay more to teachers with advanced degrees, and 19 states (including Tennessee) require districts to reward teachers for previous years of experience (Wesson, 2013).

In 2013, the average classroom teacher salary in Tennessee was \$47,563 (Tennessee SBE, BEP Review Committee, 2013). This ranks Tennessee 40th in the nation in terms of the average salaries teachers are paid and 40th in the nation in terms of growth in salaries over the past decade since 2003-2004 (National Education Association, 2014, p. 94). According to a recent report on teacher pay by the Center on American Progress, with an average base pay of \$39,100 for a teacher with a bachelor's degree and 10 years of experience, mid-career Tennessee teachers who head a family of four or more qualify for five state benefit programs. The report also indicates that the highest step on the state salary schedule is \$56,900, and that 15 percent of Tennessee's teachers resort to second jobs outside of the school system to earn on average an additional \$3,700 per year (Boser & Straus, 2014).

Percentages of School Spending on Instruction

Salaries and benefits for teachers (and other instructional personnel) accounted for 56 percent of Tennessee school spending, totaling \$3.02 billion for the 2010-2011 school year (TDOE Annual Statistical Report 2010-11, as cited in Wesson, 2013). According to the National Center for Education Statistics (U.S. Department of Education, National Center for Education Statistics, 2014), the single largest component of public school expenditures nationwide was instruction, amounting to about 61 percent of the total or \$6,852 per student in 2009-2010. These expenditures included salaries and benefits received by teachers and teaching assistants, as well as costs for instructional materials and services provided under contract.

The next section overviews the history of Tennessee's exploration of teacher compensation from 1984 to the present, beginning with the Comprehensive Education Reform Act in 1984.

Overview of the History of Tennessee Teacher Compensation Reform

This part of section III presents a brief chronological summary of the history of teacher compensation reform, starting in 1984. Tennessee was one of the first states to explore teacher compensation and career ladders (Furtwengler, 1987), through its Comprehensive Education Reform Act.

Comprehensive Education Reform Act and Career Ladder Exploration in Tennessee (1984-1997)

As part of the Comprehensive Education Reform Act (CERA) (Tennessee Public Acts 20, Tennessee Annotated Code 49-5-5002(a)), Tennessee began its career ladder program in 1984 (cited in Cour, 2009b). Its purpose was to promote staff development and to reward teachers and administrators who were evaluated as outstanding. Although initially established as a mandatory program, the Career Ladder Program was made voluntary in 1987 (Tennessee Comptroller of the Treasury, 1997).

Table 1.

Summary of Early Career Ladder Levels, Eligibility Requirements, and Incentives in Tennessee

Career Ladder Levels	Eligibility Requirements	Incentives
Probationary Teacher	Teacher who received a state certification after a positive evaluation and recommendation from the local school board	None
Apprentice Teacher	Teacher with less than three years of experience who received successful evaluations	\$500 stipend
Career Ladder I	Teachers with three (3) years of experience who either passed a test or received successful evaluations.	\$1,000 stipend Eligibility for Career Ladder II
Career Ladder II	Teachers with six (6) years of experience who received	\$2,000 stipend (for 10 month employees)

Career Ladder Levels	Eligibility Requirements	Incentives
	successful evaluations (including passing a test, developing a portfolio, and evaluations 3/year)	\$4,000 stipend (for 11 month employees) Eligibility for Career Ladder III
Career Ladder III	Teachers with ten (10) years of experience who received successful evaluations (including passing a test, developing a portfolio, and evaluations 3/year)	\$3,000 stipend

Sources: Cour (2009b); Reddick & Peach (1986); Tennessee Comptroller of the Treasury (1997)

Note: The stipend amounts were reported as of 1997 and may represent much higher values than seems the case at first.

Implementation and Participation in Career Ladder Program

A 1997 audit of the effectiveness of the Career Ladder Program by the Tennessee Comptroller of the Treasury reported the following about the program:

- **Administration.** The Career Ladder Program was administered by seven full-time staff members, 29 contracted evaluators, and four contract staff. The program had expenditures of nearly \$105.6 million in fiscal year 1996.
- **Teacher participation.** As of December 1996, 45,978 teachers were certified on the Career Ladder: 81 percent at Level I, 7 percent at Level II, and 12 percent at Level III. Data from the TDOE indicated that a large percentage of Level I teachers had decided not to climb the Career Ladder, although they were eligible to apply for certification at Levels II and III. The participation rate (those certified compared to those eligible to participate) was 77 percent for Level I, 8 percent for Level II, and 17 percent for Level III. Many teachers began, but did not complete, the Career Ladder Program evaluation process for Levels II and III. The completion rate was 52 percent during fiscal year 1995 and 47 percent during fiscal year 1996 (p. 10).
- **Extent to which the program reached its goals.** Although the Career Ladder Program appeared to have succeeded in providing pay supplements to educators evaluated as outstanding, it is unknown the extent to which the program has (1)

reached (and rewarded) the outstanding teachers in Tennessee, (2) improved teacher performance, or (3) improved student progress and achievement. Evaluating the effectiveness of the Career Ladder Program is made more difficult because of legislative changes that may have altered the program's focus, and because there are little or no reliable data to link teacher performance to student achievement.

Issues Identified with the Career Ladder

The audit report identified three key issues with the implementation of the Career Ladder: the associated evaluation process, conflict with Tennessee's tenure system, and the Career Ladder's impact on stipends for extended contracts.

- **Evaluation process.** Because the evaluation process was lengthy, time consuming, and costly, and the rewards of certification were somewhat limited, many truly outstanding teachers may have decided not to participate at the upper levels. In addition, although Career Ladder Program staff trained the evaluators and periodically adjusted the evaluation process in an attempt to make it as objective as possible, the process remained subjective based as it was on very limited observations of each teacher in the classroom (Tennessee Comptroller of the Treasury, 1997).
- **Conflict with tenure system.** Under current law, a teacher is awarded tenure at the end of his or her probationary period (i.e., three years of teaching) if he or she is reemployed by the same school system. However, that same teacher would not receive a professional license or Career Level I status until the end of his or her fourth year of teaching. Therefore, the decision whether or not to award tenure was made before the teacher was determined sufficiently competent to receive a professional license or a Career Ladder I certificate. In addition, the decision to grant Level I certification may have become perfunctory because it was difficult to deny Level I certification to an already tenured teacher (Tennessee Comptroller of the Treasury, 1997).
- **Impact on stipends for extended contracts.** Depending on a teacher's status with the Career Ladder, s/he became eligible for extended contracts for summer employment with a stipend of \$2,000 per month. Extended contracts became increasingly difficult for districts to manage (Cour, 2009b).

As a result, in 1997, the Tennessee legislature abolished the Career Ladder for all new teachers while allowing teachers who had achieved Career Ladder status to continue receiving stipends (Cour, 2009b).

During the years of the Career Ladder implementation, Tennessee was also addressing salary equity issues, as described below.

Salary Equity Plan (1995-2002)

In 1995, following the Small Schools II lawsuit and the Tennessee Supreme Court Decision, the legislature enacted the salary equity plan (Tennessee Code Annotated § 49-3-366), which was a one-time effort to equalize teacher salaries in those school districts where the average salary was below \$28,094 (as of 1993), but did not include teacher salaries as a component of the BEP. The plan provided for state and local funds “in support of teachers’ salary equity” to increase teacher compensation in school districts averaging less than \$28,094 per year per instructional position. The plan required the state to pay the same percentage of salary equity funds for each school district as it paid toward the cost of classroom components of the BEP for each district and also required local governments to appropriate funds sufficient to pay their proportionate share. However, it did not provide for annual review or cost determination of teacher salaries under the BEP. In 2002, the Tennessee Supreme Court ruled that the salary equity plan did not include equalization of teacher salaries (Cour, 2009b).

Teacher Salaries Added to BEP (2004)

In 2004, the Tennessee General Assembly changed the way the BEP calculated teacher salaries in all districts by providing a set dollar value for each instructional position (Cour, 2009b). Originally, the BEP formula used a combination of teacher training and experience to determine teacher salary for each district. Because of this change, the Small School II lawsuit was officially closed in 2006 since both parties agreed that funding equity was achieved (Cour, 2009b).

Differentiated Pay Plans in Tennessee (2007-2010)

In 2007, the Tennessee General Assembly passed Public Chapter 376, which required school districts to develop and adopt differentiated pay plans to “aid in staffing hard-to-staff subject areas and schools and in hiring and retaining highly qualified teachers.” (Tennessee Public Acts 2007, Chapter 376):

Develop guidelines for the establishment by LEAs of differentiated pay plans, including plans which offer bonuses, including performance bonuses, that are supplemental to the salary schedules required under §49-3-306. Such plans shall address additional pay for teaching subjects or teaching in schools for which LEAs have difficulty hiring and retaining highly qualified teachers. The state board of education shall develop the guidelines by December 31, 2007.

Previously, districts were allowed to have differentiated pay plans but the state did not require them. The new law required that all school districts “develop, adopt and implement a differentiated pay plan ... to aid in staffing hard to staff subject areas and schools and in hiring and retaining highly qualified teachers” (Cour, 2009b, p. 4).

SBE Guidelines

The SBE guidelines (2007) stated that submitted plans should address one of the following areas of need:

- recruiting teachers to hard-to-staff schools;
- recruiting new teachers;
- filling LEA-specific academic shortage areas; or
- retaining effective teachers.

The approved plans might include, but were not limited to, loan forgiveness strategies, fellowships, pay supplements, and/or signing bonuses. Supplements were to be sufficient to make a difference to teachers (i.e., in the thousands, not hundreds, of dollars). The plans should make it more likely that LEAs would be able to recruit qualified individuals into high-need schools and fields, based on data-driven determinations of need as reviewed by the LEA.

The SBE guidelines required the TDOE to review and approve differentiated district pay plans only if funds for the plans were “budgeted, continual and approved in advance by the local board of education” (Cour, 2009, p. 4). Prior to the 2007-2008 school year, the SBE adopted guidelines for differentiated pay plans, and LEAs submitted the plans to the Department of Education (Tennessee State Board of Education, June 21, 2013).

Model Differentiated Pay Plans

According to Cour (2009a), 136 districts submitted plans that included some of the following components:

- bonuses for high-need teachers or administrators (82 districts),
- tuition reimbursement for endorsements in high-needs areas (48 districts),
- bonus for National Board for Professional Teaching Standards certificate (47 districts),
- testing fees reimbursed for endorsements in high-need areas (22 districts),
- bonus for student achievement gains (9 districts),
- class size reductions (8 districts), and
- bonus for obtaining additional degrees (5 districts).

Lack of Funding for Implementation

The majority of these plans represent bonus models. According to Cour (2009), since the legislation did not appropriate additional funds for plans, some districts did not have adequate funds to pay for the differentiated pay plans. As a result, plans were not implemented in some districts.

Tennessee State Law Revised in 2010

State law was revised again in 2010 as part of the First to the Top legislation to allow local school districts to develop alternative salary schedules and submit them to the state for approval (Public Acts 2010, Chapter 2. Section 12) (cited in Wesson, 2013).

In the alternative option, an LEA may submit to the commissioner its own proposed salary schedule, subject to collective bargaining where applicable. Implementation of such a salary schedule must be approved by the commissioner and the SBE. A salary schedule cannot result in a salary reduction for a teacher employed by the LEA at the time of the salary schedule's adoption. Additional expenditures incurred as a result of a salary schedule are subject to appropriation by the governing body empowered to appropriate the funds.

Race to the Top Grant and Competitive Compensation Initiatives (2010–Present)

In 2010, the U.S. Department of Education awarded Tennessee a federal Race to the Top grant (also known as First to the Top in Tennessee), allocating more than \$500 million toward reforming education across the state. Tennessee was one of two states in the first round to receive the awards. Developing and retaining great teachers and leaders in Tennessee's schools was a cornerstone of the state's application.

Tennessee's Race to the Top proposal outlined two competitive compensation initiatives for LEAs to reward teachers and principals for increasing student achievement:

- **Competitive Supplemental Fund (CSF)** to support the planning of compensation models by the 28 districts that received the smallest First to the Top local awards (Total \$1.5 million), and
- **Innovation Acceleration Fund (IAF)** to support a district's adoption and implementation of alternative compensation systems (Total \$12 million).

CSF Grants

The CSF grants were designed to raise student learning by encouraging, guiding, and rewarding educator effectiveness, while addressing challenges in the recruitment and retention of highly effective educators (Woods & Clark, 2010). CSF grants were competitively available to the 28 LEAs with the smallest Race to the Top allocations.

- In the 2010-2011 school year, CSF grants were designated for school turnaround strategies *or* strategic compensation funding. Six of the eight awarded districts received \$50,000 to plan new compensation systems (Canon, Greenslate, Lewis, Merchant, & Springer, 2012; Wesson, 2013).
- In 2011-2012, CSF grants were targeted to strategic compensation *and* embedded professional development (Wesson, 2013). Two districts received funding to implement plans they had developed the previous year (Wesson, 2013).
- In 2012-2013, 13 LEAs implemented projects funded through the third round of the CSF (Tennessee Department of Education, 2014).

IAF Grants

The IAF grants were four-year grants to support districts in the design and implementation of sustainable compensation systems based on alternative salary schedules and rewards for teachers who increase student achievement levels (Wesson, 2013). Compensation programs funded by IAF had to include: (1) an alternative salary schedule that sets pay for educators on factors other than the state salary schedule; (2) differentiated performance-based pay for effective teachers and principals (ranging from \$1,500 to \$10,000 based on individual and/or group); (3) incentives (financial and/or working condition improvements) focused on supporting teachers; (4) recruitment and retention incentives to hire and retain teachers in hard-to-staff subjects and schools; (5) use of data and evaluation to inform decisions related to professional development,

retention, and tenure; and (6) a sustainability plan evidenced by an increasing reliance on non-IAF funds by 2012-2013 (Woods & Clark, 2010).

Through two IAF competitions, the state awarded multi-year grants to five grantee LEAs to design and implement alternative compensation systems that shift away from compensating educators solely for years of experience and toward compensating them for raising student achievement (Tennessee Department of Education, 2014).

After initial implementation in school year 2011-2012 of both alternative salary schedules and a new educator evaluation system, four grantees made payouts based on performance and analyzed results for continuous improvement (Tennessee Department of Education, Race to the Top Report, 2014).

In addition to the First to the Top funding for compensation incentives, Tennessee also received federally funded TIF grants in 2010 and 2012.

Tennessee TIF Grants for Performance-Based Compensation Systems (2010–Present)

The purpose of the TIF grant is to provide financial support to develop and implement sustainable performance-based compensation systems for teachers, principals, and other personnel in high-need schools to increase educator effectiveness and student achievement in those schools (U.S. Department of Education, 2012). In the latest program priorities, the U.S. Department of Education has encouraged grantees to make their performance-based educator compensation systems part of a coherent and integrated approach to strengthening the education workforce. A key feature of a coherent and integrated approach is alignment of human resource management practices for education between the state, districts, and schools.

- **2010 grant.** Concurrent with Tennessee’s Race to the Top award, the U.S. Department of Education awarded the TDOE a \$36 million TIF Round 3 grant in the fall of 2010. TIF grants provide funding over five years to support development and implementation of performance-based compensation systems for teachers and principals in high-need schools (i.e., schools with 50 percent or more of enrolled students from low-income families). Fourteen districts are participating.
- **2012 grant.** In 2012, the U.S. Department of Education awarded the TDOE an \$18.4 million TIF Round 4 grant to support three rural districts over five years to develop and implement performance-based compensation systems. The TDOE’s Recognizing Excellence in Rural Tennessee project builds on recent efforts to

implement a statewide educator evaluation system that ties student outcomes to educator effectiveness ratings. The three partnering districts will develop performance-based educator evaluation systems based on state-approved models, provide leadership opportunities for their most effective teachers, and offer opportunities for high-quality, targeted job-embedded professional development.

Through these federal grants, a number of Tennessee districts are exploring teacher compensation reform. In addition, a number of districts have received funding from private foundations and local businesses.

Private Funders of Tennessee Initiatives that Include Compensation Reform

According to Wesson (2013), some Tennessee districts have received private foundation funding for initiatives that included teacher compensation. For example, the Memphis School District received a \$90 million grant from the Bill & Melinda Gates Foundation in 2009, supplemented with \$20 million from local businesses and foundations, to fund its multi-year Teacher Effectiveness Initiative (Wesson, 2013).

The Milken Family Foundation is supporting the implementation of the Teacher Advancement Program (TAP) in Knox County School District. Teachers in the district's 18 TAP schools receive additional compensation if they assume roles as mentors or mentor teachers. TAP career path bonuses are paid on top of traditional salary schedules. In addition, Knox County School District has implemented a strategic compensation system, APEX (Advance-Perform-Excel), which consists of numerous bonus opportunities (e.g., schools with higher student growth, performance incentives for high-performing teachers, and instructional support incentives) (Wesson, 2013).

Summary of District Funding Sources and Types of Compensation Models

Table 2 presents a summary of districts receiving grants for teacher compensation reform and the types of compensation models. In total, ARCC was able to locate information on 27 districts (out of Tennessee's 140 school districts) that received funding between 2010-2011 and 2011-2012, several of which received funding from multiple sources.

**Table 2.**

Summary of Tennessee Districts Receiving Grants for Teacher Compensation Reform and Types of Compensation Models

District	CSF Grants	IAF Grants	2010 TN TIF Grants	2012 TN TIF Grants	2012 NIET TIF Grant	Private Foundations	Compensation Model Type
1. Bradford SSD	✓		✓				Bonus
2. Etowah County (1 school)					✓		TAP System
3. Hollow-Rock Bruceton	✓		✓				Bonus
4. Lexington City	✓	✓	✓				Salary & Bonus
5. South Carroll	✓						Bonus
6. Trousdale	✓	✓					Salary & Bonus
7. Davidson County			✓				Bonus
8. Hamilton County			✓				Bonus
9. Jackson County (1 school)					✓		TAP System
10. Johnson County			✓				Salary & Bonus
11. Knox County		✓	✓			✓	Bonus & TAP System

District	CSF Grants	IAF Grants	2010 TN TIF Grants	2012 TN TIF Grants	2012 NIET TIF Grant	Private Foundations	Compensation Model Type
12. Lebanon SSD			✓				Bonus
13. McMinn County			✓				Bonus
14. Manchester County					✓		TAP System
15. Metropolitan Nashville Public Schools			✓				Bonus
16. Putnam County		✓					Salary & Bonus
17. Scott County							Bonus
18. Shelby County			✓			✓	Bonus
19. Tipton County			✓				Bonus
20. Chester County				✓			Salary, Bonus, Teacher-Leadership roles, & hard-to-staff incentives
21. Haywood County Schools				✓			Salary, Bonus, Teacher-



District	CSF Grants	IAF Grants	2010 TN TIF Grants	2012 TN TIF Grants	2012 NIET TIF Grant	Private Foundations	Compensation Model Type
							Leadership roles, & PD incentives
22. Lincoln County Schools				✓			n/a
23. Polk County Schools				✓			n/a
24. Athens City					✓		TAP System
25. Morgan City					✓		TAP System
26. Memphis City Schools						✓	Bonus

CSF (Competitive Supplemental Fund)

IAF (Innovation Acceleration Fund)

TIF (Teacher Incentive Fund)

NIET (National Institute for Excellence in Teaching)

TAP (The System for Teacher and Student Advancement) is a comprehensive reform that links performance-based compensation to systems and processes such as professional development, evaluation, and career advancement.

n/a = not available.

Sources: S. Flowers, personal communication, July 8, 2014; Model types identified by Canon et al., (2012) and Tennessee SBE (2014).

Note: ARCC staff were not able to identify the districts with the most recent CSF and IAF grants.



Approaches of Fourteen Districts to Strategic Compensation

According to the external evaluator of the CSF, IAF, and TIF programs (Tennessee Consortium on Research, Evaluation, and Development), as of 2012, 14 districts were approaching strategic compensation as follows (Canon et al., 2012):

- Every district model featured performance-based bonuses for certified employees and used a mix of individual, school, and district accountability units and flat and tiered award structures. The percent of awards based on student performance ranged from 18 to 100 percent.
- Districts determined bonuses on the basis of the previous year's performance and included Tennessee Comprehensive Assessment Program proficiency levels, Tennessee Value-Added Assessment System scores, summative evaluation scores, and district- and school-level assessments.
- Four districts revamped their entire salary schedules.
- District salary schedules differed along three key dimensions:
 - starting base salary for the 2011-2012 school year;
 - incremental increases based on performance, which ranged from 1 to 3 percent; and
 - plans for employees who opt out (for example, three districts allowed employees to remain on the state salary schedule and receive state raises and steps up).

For more detailed information on the 14 district compensation plans, refer to the website of the Tennessee Consortium on Research, Development, and Evaluation.

<http://www.tnconsortium.org/projects-publications/compensation-reform/index.aspx>

Differentiated Pay Plans (2013-Present)

Since 2013, both the SBE and the TDOE have renewed efforts to address differentiated pay plans.

SBE guidelines. In 2013, the Tennessee SBE issued differentiated pay plan guidelines, pursuant to Tennessee Code Annotated §49-3-306(h), which requires districts to create and implement differentiated pay plans. The differentiated pay plan policy does not mandate pay for performance. However, the revised differentiated pay plan policy prevents districts from basing across-the-board pay increases solely on years of experience or advanced degrees. Districts must differentiate teacher compensation based



on at least one additional criterion. Differentiated pay criteria can include any of the following: additional roles or responsibilities, hard-to-staff schools or subject areas, and performance based on SBE-approved teacher evaluation criteria (Tennessee State Board of Education, 2013).

TDOE resources. To assist districts in the design and implementation of differentiated pay plans, the TDOE maintains a website with a variety of information and resources (<http://www.tennessee.gov/education/districts/pay.shtml>). Resources include:

- Tennessee Consolidated Retirement System letter regarding differential pay and earnable compensation,
- 2014-2015 Differentiated Pay Plan Submission Template,
- two resource guides,
- three webinars,
- information from the Compensation Accelerated Planning Cohort Sessions, and
- frequently asked questions.

2014-2015 district differentiated pay plan submission. TDOE (2013) requires districts to submit 2014-2015 differentiated pay plans using a template. The template includes the following information:

- I. Description of differentiated elements that includes hard-to-staff school, subject, or placement; performance; additional instructional roles or responsibilities; education, experience, and “other” background; compensation type and size, reach, estimated cost, and estimated salary expenditures;
- II. Salary schedule that includes proposed 2014-2015 schedule and description of how the district would allocate future state funding increases;
- III. Eligibility and Stakeholder Engagement (optional section); and
- IV. Alternative Salary Schedule (optional section) that includes salary schedule, eligibility criteria, feasibility analysis, and stakeholder engagement.

Beginning in 2014-2015, the TDOE will begin to enforce the law for district implementation of differentiated pay plans.

As of this date, ARCC does not have information on how many districts have received approval for their differentiated pay plans.



Summary

Since 1984, Tennessee has been a leader in addressing teacher compensation and salary equity among states. Tennessee was one of the first states to explore career ladders, in 1984. Since then, Tennessee has instituted policies and regulations to address salary equity (in 1995) and to design differentiated pay plans (since 2007). Currently, Tennessee uses a variety of public and private financial resources, as well as policy guidance and resources, to assist districts in teacher compensation reforms.



Section IV: Evidence on Teacher Supply and Demand in Tennessee

Introduction

The concepts informing market-based pay are not new. In 1983, *A Nation at Risk* called for teacher salaries that are “professionally competitive, market-sensitive, and performance-based,” guidelines which were subsequently adopted by various states as a basis for their teacher compensation reform initiatives (National Commission on Excellence in Education, 1983). The programs that followed the publication of *A Nation at Risk* nearly universally addressed the *performance-based* element of the guidelines, with few if any programs focused on salaries that were professionally competitive or market-based.

As Table 3 shows, over the past decade, the most prevalent teacher salary reform in school districts has been higher pay for achieving National Board for Professional Teaching Standards certification, considered an indicator of a teacher’s effectiveness. Meanwhile, the least prevalent approach has been to pay teachers more for working in less desirable locations. (No districts have adopted a market-based pay approach.) School districts reported slight increases in the prevalence of various types of compensation reform between 2003-2004 and 2011-2012; however, the percentage offering teachers no financial incentives also increased over that time period.

Table 3.***Prevalence of District Compensation Reform Initiatives Over Time***

	2003-04	2007-08	2011-12
Types of rewards	Percent	Percent	Percent
National Board for Professional Teaching Standards	18.4	24.5	24.5
Excellence in teaching	7.9	10.2	11.3
In-service professional development	24.2	n/a	n/a
Teach in less desirable location	4.6	5.7	5.6
Teach in fields of shortage	11.9	15.4	13.5
Number of incentives			
None	55.5	61.0	61.3
1 incentive	29.8	27.0	27.6
2 incentives	9.7	8.0	7.1
3 incentives	3.9	3.1	2.9
4 incentives	1.0	0.9	1.1
5 incentives	0.2	n/a	n/a

Sources: U.S. Department of Education, National Center for Education Statistics, Schools and Staffing Surveys, Public School District Data Files (2003-2004, 2007-2008, and 2011-2012)

Whereas performance-based teacher salaries serve to address the *structure* of teacher salaries to ensure that those who work hardest or are most effective are paid more than others, market-based teacher salaries serve to address the *level* of teacher salaries to ensure that they are sufficiently competitive to attract and retain high-caliber teachers for every subject and every school. As Tennessee continues to explore effective and cost-effective approaches for improving teacher recruitment, retention, and performance, attention has turned to options for teacher salary innovations through market-based pay.

But doing so requires a clear understanding of the market—including the nature of teacher shortage in Tennessee’s school districts, the non-pecuniary factors affecting teacher shortage, and the salaries of professionals in industries competing for the same talent pool as the teaching profession. A complete analysis of these factors is out of the scope of this report; however, relevant data available are summarized below. Interpreting teacher supply and demand data is complicated by a lack of consensus about the most meaningful teacher supply and demand metrics (Behrstock, 2009). Although the



available data for Tennessee do not paint an entirely coherent picture of whether and where there are teacher shortages in the state of Tennessee, they do provide worthwhile information. Most notably, the data suggest that teacher shortages continue to challenge Tennessee's schools.

Teacher Shortages in Tennessee

Several studies conducted since 2009 address teacher supply and demand in Tennessee. The investigations analyzed current and projected needs for teachers, teacher retention, teacher retirement, and teachers graduating from teacher preparation programs in Tennessee. These studies will be discussed in turn below.

First, the 2012 report of the Tennessee Department of Labor and Workforce Development found that the teaching profession—including elementary, middle, and secondary schools, and special education—faced a personnel shortage. Teacher unemployment data, college completion numbers, and expected demand based on occupational projections revealed this shortage. In contrast, significant surpluses of educational administrators, instructional coordinators, English education teachers, and teacher educators were found (Hedges & Wettemann, 2012).

Teacher shortages identified by the state of Tennessee for 2014-2015 (U.S. Department of Education, 2014) include:

- English (Grades 7-12),
- English as a Second Language (Pre-Kindergarten - Grade 12),
- Mathematics (Grades 7-12),
- Science (Grades 7-12),
- Social Studies (Grades 7-12),
- Special Education (Kindergarten-Grade 12), and
- World Languages (Grades 7-12).

Whether these shortages are due to supply or demand factors is not entirely clear given data limitations, but supply and demand data are presented below for consideration.



Tennessee Teacher Demand Data

Projected Needs for 2013-2014 School Year

A 2009 Tennessee Supply and Demand study (Bruce, Fox, Douglas, Reynolds, & Yang, 2009) estimated that the total number of teachers needed to staff the state's public schools was on the rise and expected to be 73,456 by the 2013-2014 school year. This demand for teachers was based on a calculation of pupil enrollment projections per grade divided by the minimum of the statutory pupil-teacher ratios for each grade and the current (2009) pupil-teacher ratios.

In terms of secondary STEM teachers, the study estimated that the total number of public secondary school math teachers would be 2,318 and the total number of secondary science teachers would be 1,736 in 2013-2014.

It is important to note that these numbers do not account for changes in demand related to teacher quality or effectiveness—for example, teachers rated Effective or Highly Effective in their evaluations.

Tennessee Teacher Supply Data

Bruce et al. (2009) predicted that in 2014, after accounting for those 2009 teachers who remained in the teacher supply pool, the new teacher supply from teacher preparation programs, and teachers who returned to the classroom after time away, the gap between supply and demand would be 17,553. It also is worth noting that the study modeled teacher retention and found that teachers with higher base salaries and more salary supplements were more likely to remain in their current district than were teachers who were paid less.



Teacher Retention Data

A study of Tennessee teacher retention from 2011-2012 to 2012-2013 by the TDOE (2014) found that:

- Eight percent of Tennessee's teachers left the state's public schools entirely, and about 10 percent of Tennessee's teachers were employed at a different Tennessee school in the 2012-2013 school year.
- Highly effective minority teachers were considerably more likely to leave Tennessee public schools than other highly effective teachers.
- Teachers who earned higher evaluation scores were retained at slightly higher rates than teachers who earned lower evaluation scores.
- Early career teachers were slightly less likely to be retained than other teachers. Although teachers at all experience levels sometimes moved to different schools within the same district, early career teachers were the most likely to move across districts. Highly effective early career teachers tended to be retained at slightly higher rates than other early career teachers.
- Substantial variation occurred across districts in overall retention rates, retention rates of teachers earning high evaluation scores, and the degree to which highly effective teachers were retained at a higher rate than other teachers.

According to a 2014 report by the Alliance for Excellent Education, teacher attrition from the profession costs Tennessee somewhere in the range of \$23 million to more than \$50 million per year, depending on the calculation employed (Haynes, 2014).

Teacher Retirement Data

A 2013 TDOE study of recent retirement trends among Tennessee teachers found:

- Between 2008 and 2012, the rate of teacher retirement from the workforce increased from 2.0 percent to 3.5 percent. This means that Tennessee loses about 2,000 teachers a year to retirement.
- Retiring teachers consistently rated lower in effectiveness than those teachers eligible for retirement who chose to remain in the classroom. Retiring teachers consistently rated lower than all remaining teachers regardless of eligibility for retirement.



Tennessee New Teacher Supply Data

According to the Tennessee Higher Education Commission and Tennessee SBE (2013), 42 teacher preparation programs are currently reviewed as part of the report card on the effectiveness of teacher training programs. The findings of the 2013 Report Card on teacher preparation are presented below.

2011-2012 Teacher Preparation Data

The Tennessee Higher Education Commission and Tennessee SBE (2013) reported the following information about completers of teacher preparation programs:

- Of the 4,900 completers, 86 percent were white, 77 percent female, and 88 percent from Tennessee. The majority of 2011-2012 graduates from teacher training programs in the state were white females from Tennessee.
- The most common endorsement area for program completers continued to be Elementary K-6 education with 1,975 endorsements, followed by Middle Grades 4-8 with 571 endorsements.
- As part of First to the Top, Tennessee made a commitment to increasing the number of STEM teachers. Program completers in 2011-2012 earned 557 STEM endorsements; these account for 10 percent of all endorsements received that year.

Table 4 provides a summary of the 2011-2012 teacher training program completers and their endorsement areas.

Table 4.***Endorsement Areas Earned by 2011-2012 Tennessee Teacher Training Program Completers***

Endorsement Area	Percentage of All Endorsements
Early Childhood Education	7%
Elementary Education (K-6)	34%
Middle Grades	10%
STEM*	10%
Special Education*	11%
Social Studies*	6%
English (7-12)*	5%
Physical Education (K-12)	4%
Fine Arts	5%
English as a Second Language*(PK-12)	3%
Foreign Languages*	2%
Other	3%

**Indicates high need areas*

Source: Tennessee Higher Education Commission and Tennessee SBE (2013)

Table 5 provides a summary of the 2011-2012 teacher training program completers and their STEM endorsement areas while Table 6 identifies the Tennessee institutions of higher education with the largest number of STEM endorsements.

Table 5.***Number of STEM Endorsement Areas Earned by 2011-2012 Graduates***

STEM Subjects	Numbers of Endorsements	Percentage of all STEM Endorsements
Mathematics	258	46.3%
Biology	148	26.5%
Chemistry	65	11.6%
Agricultural Education	35	6.2%
Physics	24	4.3%
Agriscience	17	3.0%
Earth Science	10	1.7%
Total	557	

Source: Tennessee Higher Education Commission and Tennessee SBE (2013)

**Table 6.*****Tennessee Higher Education Institutions with the Largest Number of STEM Endorsements***

Institution	Endorsements	Percentage Statewide
Middle Tennessee State University	48	9%
University of Tennessee, Knoxville	47	8%
Teach Tennessee	46	8%
University of Tennessee, Martin	46	8%

Source: Tennessee Higher Education Commission and Tennessee SBE (2013)

The report also included information on the placement and retention of graduates from Tennessee preparation programs.

Placement and Retention of Tennessee Graduates from Teacher Preparation Programs

The data in Table 7 are based on the program completers in the Personnel Information Reporting System (PIRS). The years refer to the number of years since the completers graduated and became eligible to teach. Therefore, these data help us to estimate the rate at which an institution's graduates enter and remain in the teaching field in Tennessee public schools.

The data show that approximately 5,000 individuals complete teacher preparation programs in Tennessee each year, about half of whom remain in Tennessee and are teaching in schools within one year; however, the percentage of teachers who continue in the classroom declines over time (Tennessee Higher Education Commission and Tennessee SBE, 2013).

Table 7.***Numbers of Completers Continuing to Teach in Tennessee Public Schools***

Cohort Year	Number of Completers	Teaching in Year 1	Teaching in Year 2	Teaching 3 Consecutive Years	Teaching 3 out of 4 Years
2008-2009	4,277	54.8%	62.5%	47.5%	48.7%
2009-2010	5,082	60.3%	63.4%	41.2%	
2010-2011	5,109	52.9%	43.7%		
2011-2012	4,900	48.1%			

Source: Tennessee Higher Education Commission and Tennessee SBE (2013)

It is worth noting that no data are available on teacher recruitment other than these preparation program data. Such data might include survey data on the views of college or high school students, particularly those with a STEM interest, toward selecting teaching as a career.

Summary

Since 2009, Tennessee has identified shortages in the overall numbers of K-12 teachers needed for public schools as well as teachers for specific subjects. There is a critical need in the state for STEM teachers, as well as shortages in high school English, social studies, world languages, Pre-K through high school special education, and English as a second language. The need for STEM teachers, however, is occurring at the same time that approximately 20 percent of all U.S. jobs require a high level of knowledge in a STEM field (Rothwell, 2013). The U.S. Bureau of Labor Statistics (2011) estimates that by 2018 Tennessee will have 109,000 STEM jobs (cited in My College Options and STEM Connector, 2013). Public school districts will have to compete to recruit and retain STEM teachers in a variety of innovative ways, including via compensation.

A market-based pay strategy would build on the differentiated pay policy that already exists, encouraging accurate and thoughtful analysis of data from other sectors to ensure that differentiation does in fact affect the labor market decisions that teachers make. Essentially, market-based pay would draw more attention to the *levels* of teacher salaries as opposed to the present and historical focus on the *structure* of teacher salaries. It



would enable districts to consider on a subject-by-subject and school-by-school basis whether salaries were sufficient to attract and retain enough teachers of the right caliber for all students.



Section V: The Research Base for Market-based Teacher Pay

Introduction

Due to the substantial resources at stake and the unparalleled importance of the work teachers do, basing teacher effectiveness policies on solid evidence is important. Yet the evidence base is often lacking or produces mixed results. This section outlines responses to 12 questions about the nature of the research related to teacher pay, more generally, and market-based teacher pay, in particular.

1. Overall, how should we characterize the research literature on the evidence base of market-based teacher pay?

Researchers have evaluated market-based teacher pay, defined as salaries aligned with the salaries available in other labor markets, only minimally. This may reflect, in part, the paucity of examples of teacher compensation policies that pay the market rate. There is, however, a good deal of evidence relating to the impact of pay on teachers, both in terms of perceptions and observations about the importance of teacher pay for teacher recruitment, retention, and, possibly, teacher effectiveness.

The research base on teacher pay consists of two bodies of literature: survey literature emerging from the education and sociology fields (which asks teachers whether and why they chose to join or leave, or planned to join or leave the teaching profession), and econometric analyses (which reports on observed changes in teacher recruitment or attrition as it relates to teacher salaries). There is a dichotomy in the two bodies of literature, which do not reference or build upon one another; although both suggest on the whole that salaries matter to teachers, the survey research tends to downplay the importance of salaries to teachers compared with other policy supports, whereas the econometric research consistently concludes that teacher salaries have a positive effect on teacher retention, if not on other outcomes (Behrstock, 2009). Given the challenges associated with interpreting both bodies of research (described below in items 5 and 9), the evidence base at this juncture does not support unambiguous conclusions about teacher pay overall.

Overall, the weight of the evidence suggests that salaries (if not salaries alone) can affect teacher retention, as concluded by a comprehensive literature review of teacher



recruitment and retention in the United States conducted by Guarino, Santibanez, and Daley (2006), which states:

Overall, recent empirical literature found that higher salaries were associated with lower teacher attrition. This finding is directly in line with the predictions of labor market theory.

Similarly, an international literature review by Dolton (2006) concludes that improving teacher pay could reduce teacher shortages.

The evidence base on differential pay policies, however, is less promising than the evidence about the impact of teacher salary on recruitment and retention. There are no published studies about two programs that introduced narrowly defined market-based teacher pay: Douglas County Public Schools (Colorado) and The Equity Project (New York). Likewise, little research examines recent innovations that elevate pay for teachers in hard-to-staff schools and subjects. As Podgursky (2011) notes, “Given the central role of teachers in school performance and of compensation in K-12 school spending, we conclude that educator compensation is a surprisingly undeveloped area of education policy research.” Experimentation with market-based pay is so new that Kolbe and Strunk’s (2012) typology of teacher incentive policies does not even include this approach (although several approaches could be construed as pertaining to market-based pay). Their typology includes:

- salary schedule modifications
 - state-mandated minimum salary levels
 - across-the-board salary increases
 - alternative salary schedules
 - “front-loaded” or “back-loaded” salary schedules
- salary enhancements
 - salary credits
 - additional pay for teaching in a subject or location with a shortage
 - additional pay for certifications or credentials
 - additional pay for extra responsibilities
 - tax waivers and credits
 - transportation subsidies



- limited duration incentives
 - signing bonuses
 - relocation incentive
 - credential or certification bonus
 - performance-based rewards
 - loan forgiveness
 - home ownership assistance
- education-and-training-related incentives
 - tuition subsidies and remission
 - pre-service teacher scholarships and stipends
 - alternative routes to teacher certification
 - tuition tax credits
- in-kind incentives
 - housing assistance
 - subsidized meals
 - access to local amenities
- retirement benefit waivers
 - return-to-work policies
 - deferred retirement

2. What does the survey research literature suggest about the importance of pay for teacher retention?

Numerous studies have gauged the perceptions of teachers and former teachers about the importance of salary for retaining teachers. Using nationally representative data from the largest national dataset on teacher mobility, the *Teacher Follow-up Survey* (Ingersoll 2003) asked *former* teachers about the factors that led them to leave, and found poor salaries at the top of the list of sources of dissatisfaction both for teachers who changed schools (49 percent) and teachers who left the profession (61 percent). Focusing specifically on new teachers who left the teaching profession after their first year, Ingersoll and Smith (2003) found that about two-thirds left either to pursue another job or due to dissatisfaction with the teaching profession; of those who left due to dissatisfaction, the percent of respondents who cited poor salaries as one of their top three reasons (79 percent) was more than double the percent of respondents who cited the next most common factor as a source of dissatisfaction, student discipline (35 percent).

According to the *Teacher Follow-up Survey*, nearly half (47 percent) of the teachers who left teaching reported moving to occupations that paid better (Keigher & Cross, 2010). However, nearly a quarter of teachers who left actually took a pay cut. Although we do not know why these teachers left—whether they were let go for poor performance or left because of dissatisfaction with working conditions or for some other reason—this finding suggests that salary is one of many reasons that teachers leave the profession. Interestingly, the only aspects of employment as a teacher that they perceived to be better than their current profession were benefits, making a difference in the lives of others, and job security.

Former public school teachers' ratings of aspects of their work that are better in their current position than in teaching (Keigher & Cross, 2010)



Figure 1. Former Teachers Compare Aspects of Teaching and their New Positions



Various states have also explored teacher perceptions of the importance of salaries to retention. For example, surveying former Illinois public school teachers, DeAngelis Peddle, Trott, and Bergeron (2002) found that 11 percent who left their positions reported salary as the primary reason for their decision. These surveys do not capture whether more effective or less effective teachers attributed leaving the profession to inadequate salaries.

Surveying nearly 40,000 current teachers, Scholastic and the Bill & Melinda Gates Foundation (2012) found that 75 percent of teachers cited higher teacher salaries as an important or very important factor for improving teacher retention. It is important to note that the Scholastic Survey and other studies (Rochkind, Immawahr, Ott, & Johnson, , 2006; Hirsh & Emerick, 2007; Farkas, Johnson, & Foleno, 2000) found that higher salaries, although rated as highly important, are rated lower than other professional supports (such as supportive principals, student discipline, and professional learning opportunities), an issue which warrants further investigation (discussed briefly below in item 5).

A survey of teachers in Florida by Kersaint, Lewis, Potter, and Meisels (2007) found that financial benefits were of medium importance to those who left the profession and of low importance to those who remained in the profession. It may be the case that salaries (and other conditions of the profession, for that matter) are less problematic for those remaining in the profession than for those who opted to leave or never entered the profession at all (the evidence base on the impact of pay on teacher recruitment is discussed below in item 3).

Few surveys have specifically asked teachers about the importance of pay for working in hard-to-staff schools. (Surveys have asked hypothetically about the fairness of paying teachers more for doing so, and these are described below.) DeAngelis et al. (2002) addressed this question with teachers in Illinois. The authors found that, although half of the surveyed teachers stated there were certain challenging schools where they would refuse to teach, nearly one-third believed higher salaries would in fact entice them to teach in these unattractive schools. Also, the *Retaining Teacher Talent* survey by Public Agenda and American Institutes for Research (AIR) asked a nationally representative sample of 890 public school teachers if they planned to make teaching a lifelong career and, of those who did not see teaching as a lifelong career, which factors might make them change their mind. "A significantly higher salary" ranked at the top of the list of factors that definitely would or might change their mind (63 percent of those who

planned to leave said it would definitely change their mind, and 29 percent said that it might change their mind) (Coggshall et al., 2009).

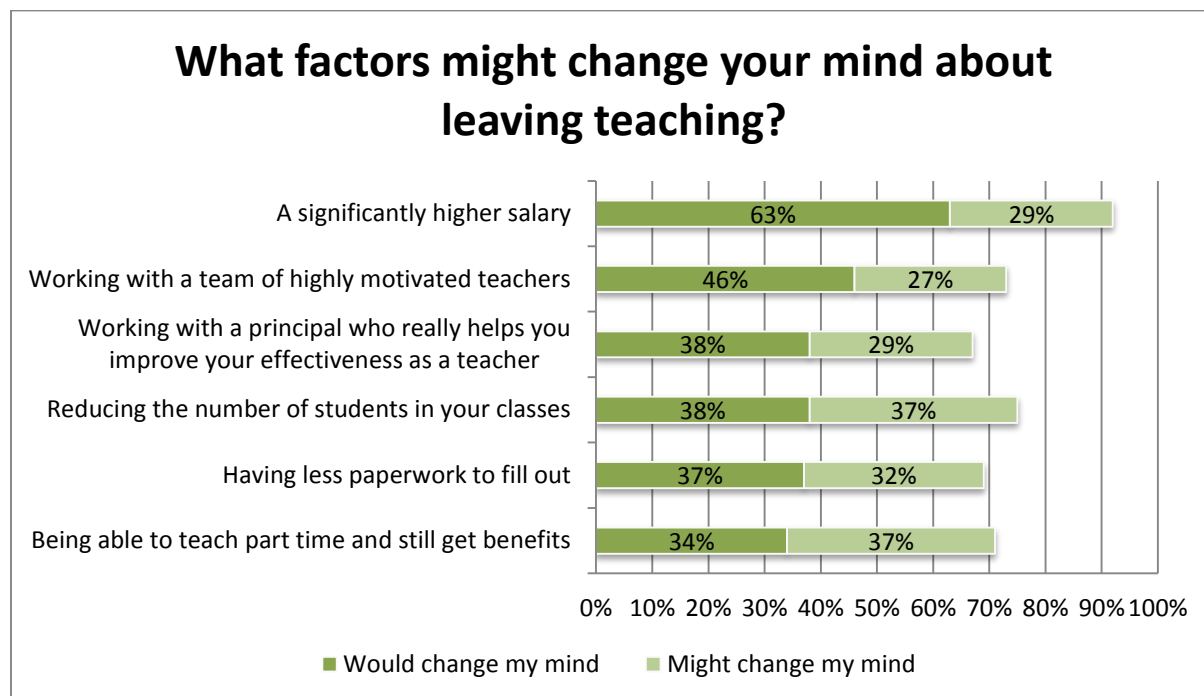


Figure 2. Factors that would Change Teachers' Minds about Leaving the Profession

Only one survey, conducted by TNTP in 2013, asked *effective* teachers about the importance of salaries to their retention (this survey is described below in item 10).



3. What does the survey research literature suggest about the importance of pay for teacher recruitment?

Only two published studies address the relationship between teacher salaries and teacher recruitment in the United States. One of these, by Milanowski (2003), focuses specifically on the recruitment of teachers in science and mathematics (discussed below in item 10). The other study was conducted by McKinsey & Company (2010), as part of a series of studies of the world's best school systems and factors that make them strong (Auguste, Kihn, & Miller, 2010). McKinsey & Company conducted market research of 1,600 high-performing college students. They asked these college students to compare teaching to their top alternate profession across a variety of characteristics.

The characteristics that relate to salaries included:

- If they did well, would they be paid appropriately?
- Could they support a family on their salary?
- Does the career pay appropriately for the skills and effort they would bring?
- Are starting salaries competitive?
- Would salaries increase appropriately over time?

For these characteristics, only 10-17 percent of those surveyed believed that teaching rated well. In contrast, 65-81 percent of those surveyed believed their chosen (non-teaching) profession rated well on the above characteristics. Compared with the characteristics associated with factors other than salaries, these discrepancies between what teaching offers and what their chosen career offers were the largest. This suggests that teacher salaries are indeed a key factor at play when academically able college students are choosing a career.

Also of note is that more than half of the survey respondents underestimated the average teacher starting salary and the average teacher maximum salary. Still, in a related survey of students from the top-third of their college class who did enter teaching, only 30 percent believed that they could financially support a family with their teaching career (Auguste, Kihn, & Miller, 2010).

One very recent study is worth noting. In June 2014, the Organisation for Economic Co-operation and Development (OECD) completed its *Teaching and Learning International Survey (TALIS)* of high school teachers, marking the first year that the United States



participated. A key finding was that, although 89 percent were satisfied with their profession overall, only 34 percent believed teaching is valued by U.S. society. The report notes, “The perceived value of the teaching profession by society is important in attracting, recruiting and retaining high-quality teachers” (Organisation for Economic Cooperation and Development, 2014). Research has not adequately explored the relationship between teacher salaries and the sense teachers have that society does not value their work.

4. What does the survey research literature suggest about the importance of pay for teacher effectiveness?

The *Retaining Teacher Talent* survey by Public Agenda and AIR asked the following open-ended question of a national sample of teachers: *What one thing would you change in order to improve the teaching profession?* Salaries were the second most popular response, although it is worth observing that teachers noted many additional policy and practice options as optimal ways to improve the teaching profession (Coggshall et al., 2009).

What one thing would you change to improve the teaching profession?

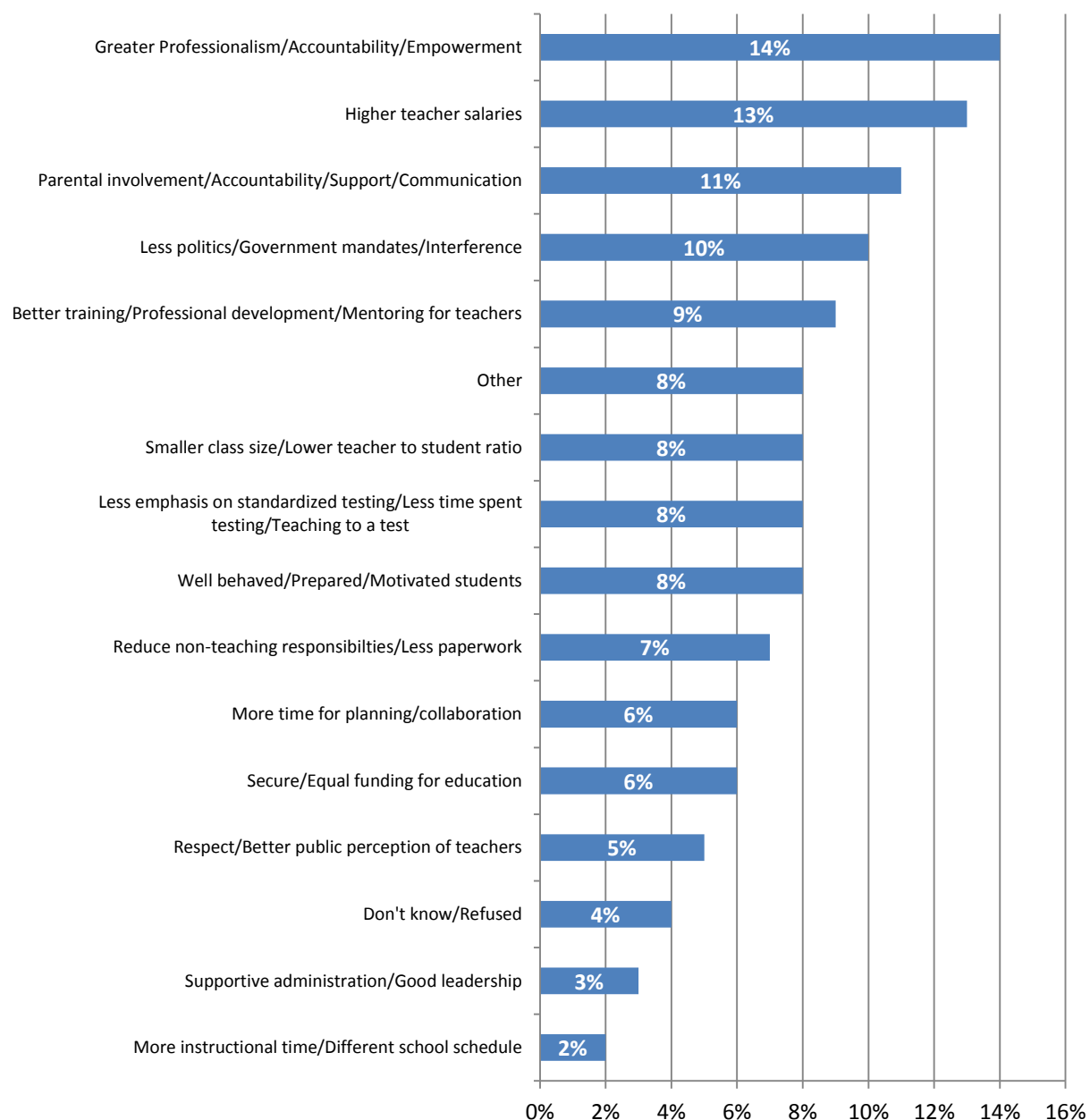


Figure 3. Teachers' Top-Rated Changes to Improve the Profession



The survey also provided respondents with a list of 12 policy changes and asked which they believed would be “very effective” for improving teaching. “Increasing teacher salaries to levels similar to other professional jobs such as lawyers and doctors” was seen as a “very effective” approach by about half of the respondents (see Figure 5 under item 10).

5. What are the benefits and limitations of relying on survey-based research?

Interpreting the survey research presents a set of challenges. First, surveys represent only perceptions or beliefs; they do not reflect actual behavior (e.g., whether teachers *actually* enter or leave the teaching profession at higher rates when salaries are increased), which is discussed below in items 6-8. In addition, on a sensitive topic like compensation, survey research may be subject to socially acceptable response bias. Finally, it can be a challenge to interpret the relative importance of various professional characteristics that emerge in the survey research. For example, it is not always clear how to interpret, from a policy perspective, a finding that teacher pay is important to a large majority of teachers but rated as less important than daily working conditions. This challenge is further complicated by the fact that survey questions about salaries are usually not specific; that is, teachers might respond very differently to a question about the impact on the profession of increasing salaries by a minor amount than a question about significantly increasing teacher salaries.

6. What does the econometric/observational research literature suggest about the importance of pay for teacher retention?

The econometric research consistently finds that rather large salary increases might be required to effect significant improvements in teacher retention. Dozens of econometric studies have examined the impact of teacher pay in the United States. A “meta-analysis” of this research by Borman and Dowling (2008) concludes that salaries are an important factor in the retention of beginning teachers and even more so for experienced teachers.

This body of research goes back many years. Examining North Carolina teachers, Murnane, Singer and Willett (1989) found that teachers paid \$2,000/year less than the state average were twice as likely to leave teaching as teachers paid \$2,000 more than the state average (note these figures would be higher in 2014 dollars). Of relevance to STEM



teacher retention, Murnane and Olsen (1990), again focusing on North Carolina teachers, found that salaries as well as “opportunity costs” (the foregone salaries an individual could have earned elsewhere) influenced how long teachers remained in the profession. Stinebrickner (1998) found that the length of time teachers remained in the profession was more responsive to salaries than to improved working conditions, including pupil-teacher ratios. Focusing on Wisconsin teachers, Imazeki (2005) found that teacher salaries would have to increase by 15-20 percent for Milwaukee teacher retention rates to increase to rates similar to other Wisconsin schools. Imazeki also found that higher salaries for experienced teachers had some effect on the retention of less experienced teachers, because it was an indicator of future earnings potential. Focusing on schools in Texas, Hanushek, Kain, and Rivkin (2001) found that increased pay of 20, 30, or even 50 percent might be needed to increase teacher retention in high-need schools to levels similar to other schools.

A related body of research examined the impact of teacher retention bonuses, rather than salaries. Most recently, the Tennessee Consortium on Research, Evaluation, and Development found that Level 5 (i.e., the most effective) teachers who received bonuses to work in Tennessee Priority Schools (i.e., the 5 percent most high-need schools) were 23 percent more likely to remain in a Priority School after receiving a \$5,000 bonus than were Level 4 teachers in those schools, who did not receive bonuses. The impact of the bonuses seemed only to apply to teachers in tested grades and subjects, however (Springer, Rodriguez, & Swain, 2014). Two other recent teacher retention bonus studies worth mentioning are Dee and Wyckoff’s study of the Washington D.C. IMPACT initiative and the Mathematica study of the Talent Transfer Initiative.

Like the Tennessee Consortium on Research, Evaluation, and Development study, Dee and Wyckoff (2013) examined the difference in teacher retention among the most highly rated teachers and those slightly less highly rated and, therefore, ineligible for the same financial incentive under the IMPACT initiative. Under IMPACT, the highest rated teachers qualified for a one-time bonus of up to \$25,000 and, after a second consecutive year achieving that rating, a permanent base salary increase of up to \$27,000 per year. Contrary to the studies noted above, the bonus/salary incentive in D.C. did not have a statistically significant impact on teacher retention during the year studied (although the authors noted some contextual factors that might explain this). The financial incentives did, however, have positive and statistically significant effects on teacher performance.



The Mathematica study (Glazerman et al., 2013) examined the impact of \$20,000 bonuses (paid over two years) for effective teachers who transferred to (and remained in) low-performing schools. Looking at such policies in 10 school districts across seven states, the study found that retention of effective teachers in these schools was significantly higher (93 percent compared to 70 percent for those who did not receive bonuses), but this effect disappeared after the two-year bonus period ended.

To make a difference to teachers, researchers suggest that financial incentives must be in the \$10,000-\$20,000 range (Springer, Rodriguez, & Swain, 2014; Feng, 2009).

7. What does the econometric/observational research literature suggest about the importance of pay for teacher recruitment?

There are fewer econometric studies in the United States that explore the relationship between teacher salaries and teacher recruitment. Hanushek and Pace (1995) estimated that a 10 percent salary increase would result in a 0.7 percentage point increase in the number of university graduates choosing teaching as a career. Manski (1987) estimated that a 1 percent wage increase would result in a 2-3 percent increase in teacher supply.

8. What does the econometric/observational research literature suggest about the importance of pay for teacher effectiveness?

It is often the case that econometric studies cannot detect any statistically significant impact of various policies on student achievement, and this is true for studies that have attempted to identify a link between higher teacher pay and student achievement. A review of research by Hanushek and Rivkin (2004), as described by Podgursky (2011), found little evidence of a strong positive effect of teacher pay on student achievement. Of 118 estimates of this relationship reviewed, 73 percent were statistically insignificant, 20 percent were positive and statistically significant, and 7 percent were negative and statistically significant. Looking at studies of states with value-added measures, of the 17 estimates reviewed, 82 percent were statistically insignificant and 18 percent were positive and statistically significant. In studying a single district's data, Jacob and Lefgren (2004) did not find a statistically significant relationship between teacher pay and teacher performance.



In contrast, as noted above, Dee and Wyckoff's (2013) study of D.C. IMPACT did find that the possibility of a \$25,000 bonus and \$27,000 base salary increase had a positive effect on teacher performance. Figlio (2002) also identified a positive impact of teacher salaries on teacher quality. Likewise, looking at U.S. Census data, Loeb and Page (2000) found that higher teacher salary levels had a statistically significant positive effect on lowering student dropout rates and increasing college attendance.

9. What are the benefits and limitations of relying on econometric/observational research?

Although the econometric research examines what actually results when teacher salaries change, they are limited in two key ways. First, these studies cannot ascertain the potential impact of states and districts actually paying teachers market-level wages, because we do not yet have examples of large-scale experimentation of this policy. Second, the econometric research is limited by available data sets, which only capture easily measurable, quantifiable data. As a result, they can be used to analyze the impact (or lack thereof) of teacher salaries on student test scores, but not on social, emotional, or other educational outcomes.

10. What is the evidence concerning teacher salaries for specific groups of teachers, such as math/science teachers or teachers from Generation Y?

The views of effective teachers. To date two surveys have examined the views of effective teachers on the teaching profession, one of which addressed the question of teacher pay. This survey, conducted by TNTP (2013), asked “irreplaceables” (teachers recognized for their effectiveness by various awards and accolades) the top three aspects of the teaching profession that served to retain them. Only six percent of these effective teachers cited compensation as one of the top three reasons they stay. In contrast, when asked what they most disliked about their job, low pay was the third most commonly cited factor, with 10 percent of “irreplaceable” teachers mentioning this drawback. The highest ranked drawbacks for these teachers were insufficient classroom resources (16 percent) and bureaucracy/paperwork (15 percent). Responding to a separate question, 29 percent of the surveyed teachers reported that a higher salary would make them feel more appreciated (TNTP, 2013).

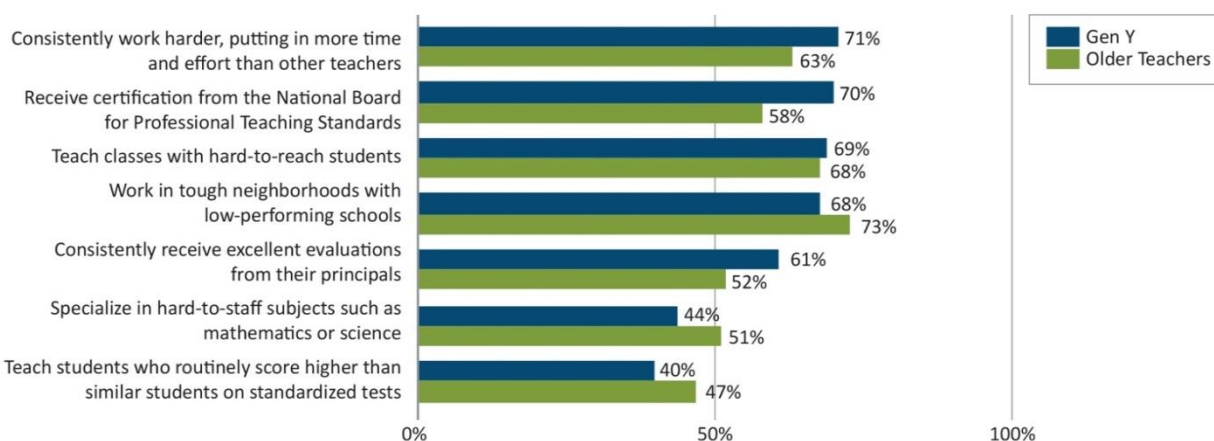


The impact of salaries on STEM teacher recruitment and retention. Many of the econometric studies described above find that salaries have a greater impact on teachers of math and science than other teachers, probably reflecting the opportunities, including opportunities for higher pay, open to them outside the teaching profession. Rumberger (1987) examined the effect of salaries on math and science teacher shortages, as measured by the percentage without a standard certification. The finding was that salaries influence teacher shortages. Specifically, a \$1,000 increase in the discrepancy between 1979 salaries for teachers and for engineers was associated with a 0.19 percentage point worsening of teacher shortages.

Milanowski (2003) explored the amount by which starting teacher salaries would have to increase in order to convince undergraduates without ambitions to teach to change their minds. Focusing on students with academic backgrounds in mathematics and science, he found a somewhat linear relationship between the amount that starting teacher salaries would have to improve and the percent of undergraduates who would teach (e.g., a 23 percent increase in starting salary would attract about 18 to 23 percent of the participants and a 45 percent increase would attract 37 to 48 percent of the participants). Goldhaber, DeArmond, Liu, and Player (2007) examined data from the 1993 class of college graduates in the national *Baccalaureate and Beyond Longitudinal Study* to estimate the salaries that individuals with different educational backgrounds could earn as teachers or in other professions. They found that, despite relatively attractive starting teacher salaries, the salaries offered by the private sector surpassed salaries for public school mathematics and science teachers within a few years, and the earnings gap continued to widen as teachers progressed in their careers, reaching a \$24,000 differential 10 years after college.

Views on differential pay. According to data from the 2003-2004 *Schools and Staffing Survey*, as reported in Podgursky (2011), teachers were less favorable toward providing bonuses to teachers in shortage subject areas (favored by 12 percent of respondents), than to teachers in high-need locations (favored by 63 percent of respondents), or teachers who achieved National Board certification (favored by 20 percent of respondents). Only 6 percent favored bonuses for teachers who performed well on evaluations. These results roughly mirror the 2009 nationally representative *Retaining Teacher Talent* survey by Public Agenda and AIR, which showed the percentages of teachers who *strongly favored* or *somewhat favored* financial incentives for different types of teachers. The *Retaining Teacher Talent* survey included an oversampling of teachers

from Generation Y (born between 1977-1995) and showed that, although this incoming cohort of teachers exhibited greater support for certain types of differential teacher pay, the differences between Generation Y and older teachers were not statistically significant (Coggshall et al., 2009).



* These differences are not statistically significant.

Figure 4. Teachers' Views on Differential Salaries

The *Retaining Teacher Talent* survey asked teachers to provide their assessment of 12 different policy options that covered a wide range of proposed strategies to improve teaching. Despite their relative openness to differential pay (presented above in Figure 4), basing pay on student performance emerged as the lowest-rated policy option to increase the effectiveness of teachers, with only 10 percent of Generation Y teachers and 8 percent of older teachers believing that “tying teacher rewards to their students’ performance” is a “very effective” way to improve teaching. Interestingly, the overall rankings among all of these options are strikingly similar for teachers of all generations.

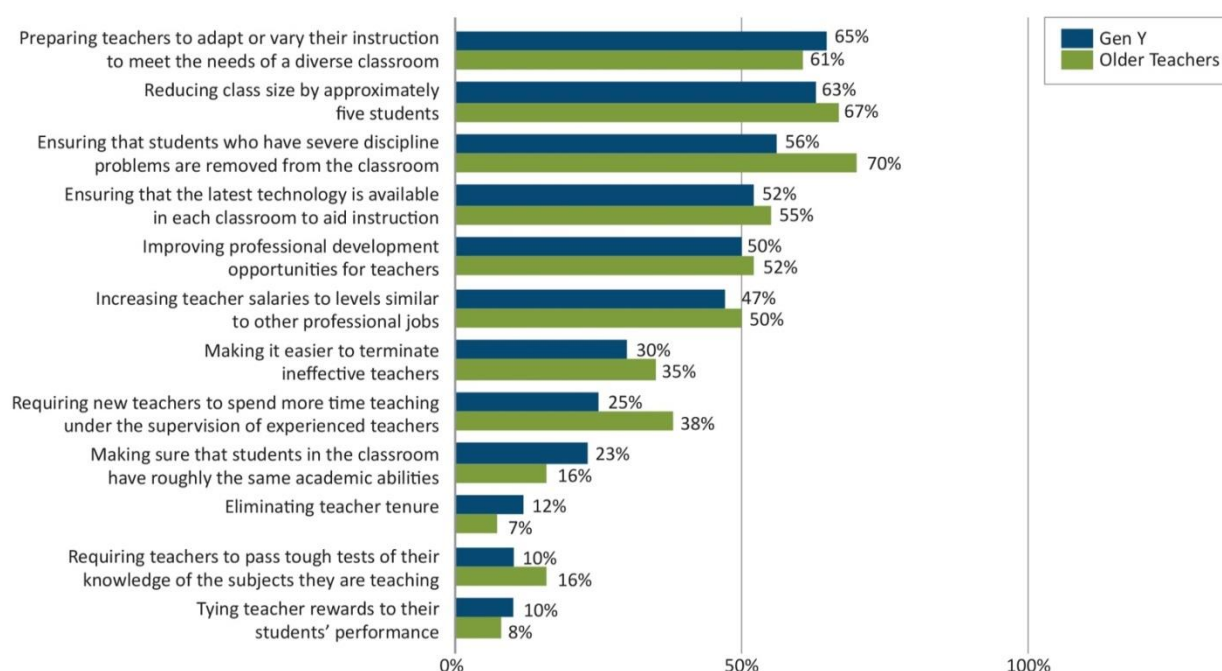


Figure 5. Teachers' Views on Strategies that would be "Very Effective" for Improving the Profession

11. What additional research is underway that will address the above questions?

In autumn 2014, Mathematica will release two noteworthy studies. The first is a study of the impact of paying teachers the market-rate of \$125,000, with an annual bonus available up to \$25,000, in New York City's The Equity Project charter school (see description below). Mathematica is also conducting the second forthcoming study, which will assess the impact of the 2010 five-year federal TIF initiative. Specifically, the study will evaluate the impact of the country's most innovative performance-based teacher pay programs on student achievement and teacher turnover and recruitment in 250 schools in 15 school districts. The grantees were required to implement higher pay for teachers based on performance, additional roles and responsibilities, and targeted professional development, but an optional element of the grant—which was encouraged—was higher pay to recruit and retain effective teachers in high-need schools and hard-to-staff subjects.



12. What can be learned from internal/external program evaluations of teacher compensation reform initiatives in other states and districts?

There have been numerous evaluations of experiments with compensation reform. Although most of these are not “market-based compensation,” narrowly defined, there are many that include an element of this approach. For instance, the fourth cohort of TIF grantees (awarded in 2012) included six grantees with a STEM focus: Washoe County School District (Nevada), School Board of Orange County (Florida), Houston Independent School District (Texas), Calcasieu Parish School System (Louisiana), South Carolina Department of Education, and the National Institute for Excellence in Teaching (Iowa).

Each of these six grantees offered salary augmentations for effective STEM teachers in high-need schools, with the goal of improved recruitment and retention. In some cases, the grantees made explicit comparisons between local salaries for teachers and salaries for other professionals. Although these grantees are in the early stages of implementation, and impact evaluations are not publicly available, these grantees may be able to provide preliminary evidence of impact upon request. Additional promising programs described in the next section may also be able to provide unpublished impact data.

Summary

Overall, the evidence suggests that salaries matter for teacher recruitment and retention, and possibly for teacher effectiveness. However, salaries are by no means the only factor that matters, and salary increases must be significant to make a difference. No program evaluations were found that would offer the type of impact data that could be used to guide salary reform policies with confidence, but several examples are adequate to guide further experimentation, dialogue, and reflection, as described in the next section.



Section VI: Emerging Practices and Lessons Learned by States and Districts

Introduction

As noted earlier, experiments with alternative teacher compensation to date have had mixed or unclear impact in Tennessee and across the nation. Although more than half of the states mandated or implemented a pilot or full career ladder program in the 1980s, all but four states discontinued their programs by the mid-1990s, due to high costs, reduced teacher cooperation in reaction to a more competitive environment, and difficulty in measuring the success of the programs (Wesson, 2013). (See Section V for a discussion of the research.) As described in Section III, since 1984, Tennessee has focused on salaries as a lever to alleviate teacher shortage problems. Yet, as described in Section IV, despite these efforts, teacher recruitment, attrition, motivation, and morale continue to present challenges. This section addresses five questions relating to approaches taken by other states and districts. Specifically, it offers examples of market-based and related efforts to increase salaries within existing budgets, as well as efforts to increase teacher pay, particularly for STEM teachers, by extending existing budgets.

1. Where has market-based pay been implemented?

Leaders in education often look to successful strategies in the private sector for guidance, and according to a 2012 survey of human resources managers, primarily in the U.S., one business trend is increased focus on *market-based* pay, with 64 percent of respondents claiming that their organizations now use a market-based approach (WorldAtWork and Deloitte Consulting, LLP, 2012). In education, however, there are only two instances of market-based pay, as narrowly defined: Douglas County, Colorado, and The Equity Project charter school in New York City. Neither initiative has yet been evaluated for its impact, but The Equity Project has achieved strong student learning results and its five-year impact evaluation will be released in autumn 2014.

Douglas County, Colorado

Beginning in the 2012-2013 school year, the Douglas County School District introduced a market-based pay system for new hires in the school district. Returning teachers received raises plus retention bonuses, depending on their date of hire and contract renewal. By



the 2013-2014 school year, all teachers shifted to the new salary scale. This market-based pay system existed alongside a performance-based pay system, which provided bonuses based on the district's teacher evaluation system.

The district began by identifying five salary bands: B25, B30, B35, B40, and B45 (in Year 3 a sixth salary band was added). Teachers are placed in each band according to their subject and grade taught; in total, 72 positions were assigned to one of these bands. The base salary, additional salary based on years of experience, and the maximum salary apply to all teachers within a particular band. The assignment of subjects/grades to bands may vary from year to year depending on the labor market. Table 8 does not include all subjects/grades but provides a sample for illustrative purposes:

Table 8

Sample Douglas County (Colorado) Salary Bands

Band	Examples of Subjects Included	Base Minimum Salary for New Teacher	Range of Starting Salary for Experienced Teachers	Base Maximum Salary
B25	Elem. Social Studies, P.E., Middle School Art, Grades 2-5	\$32,000	\$35,000 – \$48,000	\$60,000
B30	Music, Elementary School Art	\$33,000	\$36,000 – \$52,000	\$64,000
B35	Foreign Language (Spanish/French), Literacy, Grades 1, 6	\$35,000	\$38,000 – \$60,000	\$72,000
B40	Math and Science (High/Middle), Foreign Language (Asian)	\$37,000	\$40,000 – \$70,000	\$82,000
B45	Special Ed, Psychologist	\$45,000	\$50,000 – \$80,000	\$94,000

Note: This table is out-of-date and incomplete; it is included for illustrative purposes only. Source: National Council on Teacher Quality (n.d.).

The hypothesis informing this approach is that higher salaries in hard-to-staff areas will attract more teachers to those areas (or encourage current teachers to gain certification in shortage areas), while comparatively lower salaries in the easy-to-staff areas will



signal the market reality to teachers and aspiring teachers, and free up resources to address the shortage areas.

Evaluation of outcomes. No studies have yet been conducted on the initiative. But in an informal discussion on July 22 with Brian Cesare, Chief Human Resources Officer, and Mary Chesla, Compensation Director, they reported increases in the number of applicants per vacancy and anecdotal reports of higher quality applicants and interest among current teaching staff in career pathways to higher-paying positions. Communications and messaging around the market-based pay approach, however, was identified as a challenge.

For more information on Douglas County Schools, visit

<https://www.dcsdk12.org/district/about-douglas-county-school-district>

The Equity Project Charter School, New York City

In 2009, The Equity Project (TEP) Charter School was established in the Washington Heights neighborhood of New York City. The school, serving students from Grades 5 to 8, pays each teacher a salary of \$125,000, with an annual bonus available up to \$25,000. The Equity Project has adopted three strategies—the three R’s for teachers—to attract and retain high-quality teachers.

- **Rigorous qualifications.** Teachers are experts in subject matter, teaching, curriculum development, and verbal skills.
- **Redefined expectations.** Student achievement is improved through daily peer observations and co-teaching, a six-week summer development institute, and a mandatory sabbatical once every five or six years.
- **Revolutionary compensation.** Teachers receive salaries of \$125,000 and a bonus of up to \$25,000 based on school-wide performance.

The theory behind this type of approach to market-based pay is that recruiting excellent teachers for every student becomes more feasible if salaries (and other working conditions) more closely reflect the labor market pay for professionals with the right mix of talent, skill, and dedication. Not only will excellent teachers be drawn to the higher salaries, according to this view, they will also be drawn to the high-caliber colleagues who will also be recruited through such competitive salaries. The high salaries are funded within the regular New York City school budget primarily through cuts in administration



(e.g., the vice-principal is also a full-time teacher and teachers assume most other tasks typically under the purview of administrators), class sizes of 30, and fixed electives.

Evaluation of outcomes. No research has yet been published but the five-year impact study will be released in autumn 2014. Nonetheless, preliminary data (The Equity Project Charter School, 2014) show that in 2012-2013, the school:

- received an overall grade of “A”,
- received a percentile rank of 90 (this means that TEP placed within the top 10 percent of all middle schools in New York City based on data from 2012-2013, TEP's fourth year of operation),
- ranked in the top 5 of all charter middle schools in New York City, and
- was one of only four charter middle schools in New York City to achieve a top 10 percent ranking in each of the past two years.

Moreover, in an informal meeting on July 17, Zeke Vanderhoek, Founder and Principal of Equity Project Charter School, noted that the school's long-term growth percentile for mathematics is the second highest among the 330 middle schools in New York City and the growth percentile for reading is significantly above the New York City state average. In addition, Vanderhoek noted that student attendance is in the top one percent for New York City; the teacher applicant pool is very capable with more experience than typical for hiring in New York, and the teacher retention rate is 90 percent (among the 75 percent of teachers invited to return each year). Vanderhoek also reported the school has seen annual *surpluses* of \$700,000 to \$1 million.

For more information on the Equity Project Charter School, visit <http://www.tepcharter.org>



2. What other innovative approaches to increase teacher pay, particularly in shortage areas, have been implemented?

Numerous initiatives by both states and districts have sought to increase teacher pay, particularly to recruit and retain teachers in shortage areas. Metro Nashville Public Schools is currently piloting Public Impact's Opportunity Culture Model, one promising initiative. Other innovative pay reforms include TIF grants focused on STEM subjects in high-need schools, Mission Possible in Guilford County (North Carolina), and statewide STEM teacher recruitment and retention initiatives in Georgia, Ohio, and Virginia.

Public Impact's Opportunity Culture Model

The Opportunity Culture Model, introduced by Public Impact, provides teachers with restructured professional growth and career opportunities, based on their strengths, leadership skills, and impact on student achievement. The goal of an Opportunity Culture is to extend the reach of excellent teachers and their teams to more students, for more pay within available budgets. The new job models and age-appropriate use of technology in an Opportunity Culture allow teachers to focus on their strengths and interests and advance in their careers without being forced out of the classroom. When properly planned, an Opportunity Culture can pay *all* teachers more—and excellent teachers *much* more.

Participating schools must follow the Opportunity Culture Principles, which require extending the reach of excellent teachers, often through teacher-led teams; paying teachers more within budget; providing in-school time for planning, collaboration, and development; and matching accountability to each person's responsibilities.

The Opportunity Culture hinges on a cycle of:

- **teacher selectivity** in terms of who enters the profession, by ensuring financially rewarding and developmentally engaging careers that provide supportive, collaborative working environments;
- **opportunity for advancement** that retains impact in the classroom through differentiated teacher leadership roles, collaboration with peer teams, and co-teaching, all designed to provide on-the-job learning and to play to individual teacher strengths in instruction;

- **higher pay** that reaches six figures without increasing class size by re-allocating funds through differentiated roles, including paraprofessionals, academic resource teachers, and teacher leaders.

Figure 6 illustrates this cycle:



Figure 6. Public Impact Opportunity Culture Model

Public Impact estimates that the Opportunity Culture model can increase the pay of excellent teachers by 130 percent, within existing budgets.

Implementation Partner Sites

Since 2012, Public Impact has worked to identify and partner with several school districts to implement the Opportunity Culture Model. Partnership sites include:

- Metro Nashville Public Schools' Innovation Zone (see description below);
- Charlotte-Mecklenburg Schools in North Carolina (Project L.I.F.T.);
- Syracuse City School District (four of the highest-need schools in New York's fifth-largest district are using teacher-led teams to design new staffing models); and
- Cabarrus County, North Carolina.

In addition, several charter school networks have adopted models related to the Opportunity Culture Principles.



Opportunity Culture in Metro Nashville Public Schools

With funding from the federal School Improvement Grant program, Metro Nashville Public Schools (MNPS) created the Innovation Zone in summer 2011 to provide greater resources, flexibility and autonomy to its high-priority schools (Public Impact, 2013). Three schools—Buena Vista Elementary, Robert Churchwell Museum Magnet Elementary, and Bailey STEM Magnet Middle School—will begin their second year of implementing a Multi-Classroom Leadership model under Opportunity Culture in fall 2014. Funding for Public Impact’s work with MNPS comes from federal School Improvement Grant funds provided to MNPS. The Opportunity Culture initiative is made possible in part by funding from Carnegie Corporation of New York, the Bill & Melinda Gates Foundation, and The Joyce Foundation.

Evaluation of outcomes. No studies have yet been conducted on the impact of Opportunity Culture in MNPS or the other pilot sites. However, the Gates Foundation recently funded data-collection that will enable Opportunity Culture site leaders and external audiences to view rich information about the progress of implementation and the effect on teachers and students.

2012 TIF Grantees

Authorized in 2006 by P.L. 109-149, TIF grants provide financial support to develop and implement sustainable performance-based compensation systems for teachers, principals, and other personnel in high-need schools in order to increase educator effectiveness and student achievement in those schools (U.S. Department of Education, 2012).

The TDOE was among the 2012 TIF grantees. In addition to implementing performance-based compensation systems tied to rigorous teacher and principal evaluation systems, 2012 TIF grantees are expected to implement comprehensive human capital management systems. Six 2012 grantees were selected to implement programs with a specific focus on STEM teachers. The South Carolina and Houston Independent School District programs are described below.

South Carolina Department of Education

The South Carolina Department of Education (SCDOE) will build on previous TIF efforts to expand its human capital management system in high-need LEAs across South Carolina, with an emphasis on recruiting and retaining teachers to strengthen science,



technology, and mathematics. SCDOE partnered with the National Institute for Excellence in Teaching's TAP program and seven LEAs. At the time the TIF application was submitted the school districts and numbers of schools served included: Barnwell 19 (three schools); Beaufort 01 (eight schools); Florence 3 (four schools); Jasper 1 (one school); Laurens 56 (one school); Lee 1 (four schools); and Orangeburg 4 (three schools) (South Carolina Department of Education, 2012).

- **Funding.** 2012 TIF initial funding amount (two years): \$5,272,237; total (five-year) project cost: \$24,672,570
- **Amount of incentives for STEM teachers.** \$7,500 for hard-to-staff subjects in high-need schools if teachers received a successful effectiveness rating the first year; \$3,750 if they received a successful effectiveness rating the second year, and \$3,750 if they received a successful effectiveness rating the third year; total \$15,000 (South Carolina Department of Education, 2012)
- **Type of incentive.** Limited duration incentive

Evaluation of outcomes. ARCC was unable to find any information on an evaluation.

Houston Independent School District

The Houston Independent School District (HISD) human capital management system and performance-based compensation system will focus on teacher effectiveness and growth in student learning both across the campus and for individual teachers. Teachers at 24 high-need schools will be eligible for incentives. This project will allow HISD to increase and retain the number of effective teachers teaching poor, minority, and disadvantaged students in hard-to-staff subjects, increase principal effectiveness, and increase student achievement. The project will increase the number of high-quality STEM teachers, especially in the earlier grades, so that students are prepared for college and careers (Houston Independent School District, 2012).

In its grant application (2012), HISD proposed a \$10,000 sign-on bonus for STEM teachers who transferred from non-participating TIF schools to participating TIF schools, or teachers outside of HISD with student growth data who made a five-year commitment. Retention bonuses of \$5,000 would be available to STEM teachers who received effective or highly effective ratings and met criteria for student growth scores.



- **Funding.** 2012 TIF Funding Amount (two years): \$7,714,032; total (five-year) project cost: \$15,938,747
- **Amount of incentives for STEM teachers.** \$10,000 sign-on bonus and \$5,000 retention bonus
- **Type of incentive.** Limited duration incentive

Evaluation of outcomes. ARCC was unable to find any information on an evaluation.

District and State Compensation Reforms Addressing STEM Teachers

Numerous initiatives around the country are aimed at improving STEM teaching through salaries, career ladders, and other approaches. This section highlights several recent efforts by a school district and three states to include STEM teachers in compensation reform: Guilford County Schools (NC) and the states of Georgia, Ohio, and Virginia.

Guilford County, North Carolina

In 2006, Guilford County Schools launched Mission Possible, a comprehensive teacher incentive program. The district selected twenty schools in its first year of implementation based on socioeconomic factors, teacher turnover rates, state accountability, and Adequate Yearly Progress goals.

- **Funding.** Initially, the superintendent and the district financed the program by (1) increasing average fifth-grade class size by 0.5 students, thus reducing the total number of fifth-grade teachers across the district and (2) leaving 30 teaching assistant positions vacant. The district allocated \$2,073,624 in local funding for the Mission Possible program for the 2006-2007 school year (Rowland, 2008). In addition to local funding, the district has received two TIF grants.
- **2006 TIF grant.** In 2006, Guilford County Schools received \$8 million through a TIF grant to expand Mission Possible to eight additional schools. Recruiting incentives ranged from \$2,500 to \$10,000 and performance incentives ranged from \$2,500 to \$5,000. To receive the individual performance incentive, teachers had to complete 100 percent of the yearly prescribed professional development activities and earn value-added scores at least one standard error above the district mean (Rowland, 2008).



- **Amount of incentives for STEM teachers in 2006.** Grade 6-12 math teachers with a degree in mathematics or 24 hours of training in a STEM area received \$9,000, and Algebra I teachers received \$10,000 (Rowland, 2008).
- **2010 TIF grant.** Later, the district expanded Mission Possible through a \$23 million 2010 TIF grant to an additional 20 schools. Recruitment incentives were added beyond math to include biology and chemistry teachers and teachers of exceptional children.
- **Amount of incentives for STEM teachers in 2010.** By the 2010 TIF grant, the recruitment bonuses were \$5,000.
- **Type of incentive.** Limited duration incentive

Evaluation of outcomes. According to the 2010 external evaluation report, the district received 591 math applications in 2007 and 412 applications in 2008, with the result that all vacancies were filled in 2008 (SERVE at UNCG, 2010).

Eighty-seven percent of the Mission Possible teachers from the 2006-2007 school year returned for the 2007-2008 school year (Rowland, 2008).

For all personnel receiving incentives, the Mission Possible personnel turnover rate dropped from 29.4 percent in 2007-2008 to 13.3 percent in 2008-2009 (SERVE, 2010). Unfortunately, the 2010 external evaluation report did not analyze the retention rates of mathematics teachers.

For more information on Guilford County Public Schools, Mission Possible, visit http://www1.gcsnc.com/depts/mission_possible/background.htm

Georgia Differentiated Compensation for New Math and Science Teachers

In 2009, the Georgia General Assembly approved House Bill 280, which created differentiated compensation for math and science teachers. The bill included a compensation determining process for secondary (grades 6-12) teachers linked to certification and a compensation determining process for K-5 teachers linked to a certificate endorsement.

A secondary school teacher in a local school system who is or becomes certified in math or science by the Professional Standards Commission shall be moved to the salary step on the state salary schedule that is applicable to six years of



credible service (which equates to salary step four) unless he/she is already on or above the salary step.

A kindergarten or elementary school teacher who receives an endorsement in math, science, or both from the Professional Standards Commission, shall receive a stipend of \$1,000 per endorsement for each year such endorsement is in effect, up to a maximum of five years. (Georgia House Bill 280, 2009).

The program was to begin on July 1, 2010.

- **Funding.** The governor and legislature approved funding for the program under the Quality Basic Education Program in its first year at \$9.59 million (Georgia Department of Education, 2011). Georgia's Alliance of Education Agency Heads Math/Science Task Force proposal for differentiated compensation (2008) estimated that entry level math and science teachers, new hires, would obtain substantial salary raises: \$4,560 at the T4 Level, \$5,245 at T5, \$5,926 at T6, and \$6,577 at T7. Teachers already working at steps 1, 2, and 3 would also receive salary increases, if they held a clear renewable certificate. In the proposal, about 2,862 teachers would be affected the first year, with an average salary increase of \$3,350 per teacher. The beginning pay for new math and science teacher hires would rise to more than \$40,000 for the overwhelming majority of school systems. The only cost to local systems associated with elevated salaries would be an increase in certain benefits: social security (if a system paid it), teacher retirement, and Medicare (Georgia Alliance of Education Agency Heads Math/Science Task Force, 2008). For fiscal year 2013, the governor proposed funding the program at \$3 million.
- **Amount of incentives for STEM Teachers.** Estimated range from \$3,350 to \$6,577 and subject to general assembly appropriations (Georgia Alliance of Education Agency Heads, Math/Science Task Force, 2008)
- **Type of incentive.** Salary schedule modification

Evaluation of outcomes. ARCC was unable to find any information on an evaluation.



Ohio STEM Teacher-Signing Bonuses

Adopted on June 27, 2007 by a near-unanimous vote of the Ohio General Assembly and signed into law on June 30, 2007 by the governor, Ohio's biennial budget (Am. Sub. H.B. 119), promoted a variety of statewide STEM initiatives. The biennial budget contained \$26,900,000 to support programs that work to increase the supply of STEM and foreign language secondary teachers—areas in which the state currently suffers a severe shortage (Ohio Business Alliance Higher Education and the Economy, 2007).

In 2009, Ohio created the STEM Teacher-Signing Bonus Program which provided signing bonuses of up to \$20,000 to STEM or foreign language teachers who teach in a public school district or a school district building designated as a hard-to-staff school by the Ohio Department of Education. Qualifying candidates must be licensed to teach, teach STEM or foreign language, and teach in a hard-to-staff school for five years. The program was designed to attract and retain highly qualified STEM and foreign language teachers into public schools.

To attract and retain high-quality teacher candidates to high-need areas, the plan provided the choice of a \$4,000 signing bonus or loan forgiveness per year for each year a new STEM or foreign language teacher (or a retrained mid-career professional/teacher) teaches in a public school district. The signing bonus or loan repayment program can be up to \$20,000 per qualifying teacher.

- **Funding.** In 2009, Ohio budgeted \$4 million for the STEM Teacher-Signing Bonus program.
- **Amount of incentives for STEM teachers.** \$4,000 signing bonus or loan forgiveness each year
- **Type of incentive.** Limited duration incentive
- **Evaluation of outcomes.** ARCC was unable to find any information on an evaluation.



Ohio STEM Teacher Loan-Forgiveness Program

Also funded at \$2.5 million, the STEM Teacher Loan-Forgiveness program was designed to attract licensed teachers into STEM and foreign language secondary classrooms. The program functions like the STEM Teacher-Signing Bonus program, but enables qualified candidates to receive college loan forgiveness rather than a cash signing bonus.

- **Amount of incentives for STEM teachers.** \$4,000 loan forgiveness each year for up to \$20,000
- **Type of incentive.** Limited duration incentive

Evaluation of outcomes. ARCC was not able to find any information on an evaluation.

Virginia STEM Teacher Recruitment and Retention Pilot Incentive

In 2012, the Virginia governor proposed a new program to attract and retain STEM teachers as part of his “Opportunity to Learn” education agenda. The program would be a pilot to attract, recruit, and retain new teachers of mathematics, physics, and technology education. The STEM teachers had to have a satisfactory performance evaluation after the first year of teaching to earn a \$5,000 award and could receive an additional \$1,000 award for each of the following three years (Virginia Department of Education, 2012).

In 2013, STEM teachers had to apply to the Virginia Department of Education for consideration. Funding was to be awarded on a first-come, first-served basis with preference to teachers assigned to teach in hard-to-staff schools or low-performing schools not fully accredited (Virginia Department of Education, 2013).

The governor’s executive amendment for fiscal year 2014 expanded the pool of teachers eligible to receive incentives under the STEM Teacher Recruitment and Retention Pilot Initiative. The expansion included teachers with up to three years of experience in grade- and subject-specific STEM education. Specifically, this included teachers with an endorsement in Middle Education 6-8: Mathematics; Mathematics: Algebra I; Mathematics; Middle Education 6-8: Science; Biology; Chemistry; Earth and Space Science; Physics; or Technology Education. The amendment also included qualified teachers in these endorsement areas assigned to a teaching position in a corresponding STEM subject area, regardless of teaching experience, who were reassigned from a fully



accredited school in a school division to a hard-to-staff school or a school that is not fully accredited (Virginia Department of Education, 2013).

- **Funding.** In 2013 the Virginia General Assembly passed an amended budget for 2012-2014, known as Chapter 806, which included funding for the STEM teacher bonus pilot program. The state budgeted \$500,000 to give \$5,000 incentive awards to new teachers with licensing in secondary mathematics and science subjects who sign agreements to teach STEM subjects. For fiscal year 2014, the governor's amended budget provided \$708,000 for the Math and Science Teacher Recruitment and Retention Pilot Initiative. This increase was supported by the transfer of state funding from the existing Virginia Teaching Scholarship Loan Program and eliminating that program effective with fiscal year 2014.
- **Amount of incentives for STEM teachers.** \$5,000 for first year, and \$1,000 per year up to three additional years
- **Type of incentive.** Limited duration incentive

Evaluation of outcomes. In fiscal year 2013, 100 teachers in 50 school divisions participated in anticipation of \$5,000 for an initial incentive award after the completion of the first year with a satisfactory performance evaluation and a contract for the following year (Virginia Department of Education, 2013). No other outcome information is yet available.

3. Have any pay reforms taken place within existing school budgets?

Increasing teacher pay to market levels without also increasing resources is not a simple or straightforward endeavor. The Douglas County, TEP, and Opportunity Culture initiatives have managed to significantly increase the salaries of some teachers within the existing school budget by cutting other staffing costs in several different ways. Douglas County funds hard-to-staff teacher pay with money that otherwise went to salaries for easy-to-staff subject area and grade level teachers. The Equity Project charter school relies on the teachers to assume many administrative functions, including discipline; does not have small classes; and has fixed electives. Public Impact relies on creative staffing solutions (multi-classroom leadership, teacher specialization, voluntary class size increases, and time-technology swaps) to free up resources that cover higher pay for all teachers or for excellent teachers.



Most other teacher salary initiatives have not been sustained within existing budgets; many have been supported by multi-million dollar TIF grants, others by foundation or state programs. (See Section VII for details on other state and district approaches to funding teacher salary reform initiatives.)

4. Have business community members assisted in supporting teacher pay that is closer to market-based?

In **Austin, Texas**, the Chamber of Commerce has supported comprehensive human capital management reforms, including performance-based compensation in high-need schools. The collaboration between the district, the teachers' association, and the Chamber began in 2006 when the district approached the Chamber to request increased funding to improve teacher salaries, both across the board and as part of a performance-based compensation program pilot in several high-need schools in the district. In addition to supporting the district financially, the Chamber created a task force to engage in monthly collaboration with the district and to bring other local public and private sector organizations who had experimented with salary reform to share their successes and challenges with the Austin Independent School District leadership team.

A more recent example is **Jacksonville, Florida**. In February 2014, several wealthy business leaders pooled roughly \$5 million each (for a total of \$40 million) to provide bonuses of \$20,000 to teachers who were performing well in Jacksonville's 36 most troubled schools. One leader of the initiative, former Jacksonville Jaguars owner Wayne Weaver, explained the purpose of investing in these "lifestyle-changing" financial incentives: "We think that human capital is the best investment—having the best and brightest teach and be principals in our lowest-performing schools" (Smith Amos, 2014).

5. What can be learned informally or anecdotally from market-based teacher salary initiatives in other states and districts?

Springer, Rodriguez, and Swain (2014) note that teacher retention bonuses have ranged from \$250 to more than \$20,000 per year, and our observation is that most teacher salary initiatives to-date have provided incentives of up to several thousand dollars with effective teachers actually receiving closer to \$1,000-\$2,000 bonuses per year. This amount is far below the recommended levels. Douglas County, The Equity Project charter school, and Public Impact's Opportunity Culture model do augment salaries significantly



(at least for some teachers), within existing budgets. The Equity Project has even documented a significant budget surplus. In informal discussions with leaders of each of these three programs—Emily Hassel (Public Impact), Zeke Vanderhoek (TEP), and Brian Cesare and Mary Chesla (Douglas County)—they suggested that emulating their approach was absolutely achievable. Vanderhoek added the qualifier that the TEP model was eminently feasible provided that per pupil funding was reasonable. Each of the three models also strives to play a role in attracting a higher-caliber pool of talent to the teaching profession. Although these approaches at present are small scale, advertising the possibility of very attractive salaries to young people may go some way toward achieving that shared goal.

Summary

Narrowly defined, school and districts in the United States have implemented very few experiments with market-based teacher pay, and those that exist have not been studied. However, a five-year study of one New York City initiative to pay salaries of \$125,000 to teachers will be published in autumn 2014. On the other hand, considering market-based pay more broadly, numerous initiatives have provided bonuses, tuition reimbursement, and other financial and non-financial incentives for STEM teachers. And, Public Impact has developed promising approaches to extending the reach of effective shortage area teachers and restructuring staffing to increase teacher pay within existing budgets. The impact of these initiatives, however, is not yet known or is mixed. One lesson learned is that most salary reforms have provided relatively small incentives to teachers, but the reforms are more likely to have an impact if the size of the financial incentive is significant, a goal which must be balanced by the resources available to support higher pay. Some school districts have partnered with local business communities to support their teacher recruitment, retention, and remuneration efforts.

Section VII: Practical Questions and Considerations

Introduction

This section addresses practical questions and considerations relating to funding for teacher compensation reform and stakeholder communication and engagement. The first section provides examples of how states and districts have financed market-based pay. The second section provides lessons learned about and recommendations for effective communication and stakeholder engagement in compensation reform. The third section describes potential avenues for further teacher engagement, voice, and leadership in teacher compensation reform.

Approaches for Financing Market-based Teacher Pay

Before introducing a new approach to teacher compensation, it is recommended that the BEP Review Committee consider the full costs of any reforms. Doing so will help secure buy-in that the reforms are in fact affordable and sustainable. Palumbo (2007) suggests key questions to consider in forecasting these costs:

- What are the new costs, or “cost areas,” that Tennessee districts or the state will have to fund?
- What cost areas will likely grow over time? Will any costs decline over time?
- What is the projection for the number of employees who will be eligible for higher pay? Will certain groups of employees see their pay decline?
- What will be the maximum cost?
- Which cost areas are only temporary?
- What are the start-up costs associated with changing internal practices and requirements?
- What will be the sources of funds?
- Are the funding sources adequate for the size and duration of costs?



Once cost-forecasting is completed, Palumbo (2007) recommends:

- Develop short- and long-term financial planning based on the evaluation of both general and unique needs and costs.
- Consider the intensity of reforms, the level of participation, the initial start-up costs, and the ongoing operational costs.

After identifying potential funding sources and strategies, and considering the short-, medium-, and long-term, the BEP Review Committee or implementing districts could align the funding sources according to the nature and duration of costs, consider the possible limitations of each source of funding, and determine how each source can be coordinated to provide adequate support through various stages of implementation (Palumbo, 2007).

Guthrie and Prince (2008) and Palumbo (2007) note that other states and districts have incorporated a variety of funding strategies for differentiated teacher compensation, including:

- redeploying current state, district, or school resources,
- repackaging federal and state categorical aid programs,
- redirecting future resources or expenditures,
- seeking philanthropic grants or corporate support,
- obtaining additional public funding (e.g., taxes) or additional state aid through appropriations, and
- applying for discretionary federal grants (e.g., TIF grants).

Each of these strategies will be briefly described. **It is important to note that the strategies below are not all supported by research; rather they are intended to generate discussion and reflection about the appropriate course of action in Tennessee.**



Redeploying Current Resources

There are several options to consider when redeploying current resources. Five strategies are provided for consideration. This section also describes how Douglas County School District funded its market-based pay reform.

Consider Providing More Flexible Options for Teachers

Education Resource Strategies (ERS) (2010) suggests that districts consider providing teachers with more flexible options throughout their careers. Flexible work options can help attract higher quality candidates and candidates for hard-to-fill subjects and positions, such as technology and engineering. These options may include part-time assignments for those who desire a reduced load as well as opportunities—for those who want to increase their compensation or develop new skills—to add responsibilities, hours, or days beyond the standard full-time teaching position. But, if considering front-loading teacher pay, it is important to note that new teachers may be interested in both immediate and longer-term earnings potential.

Consider Having Teachers Reach the Top Salary Step Earlier in Their Careers

In the districts ERS studied, there were between 12 and 30 steps in the salary ladder. According to ERS (2010), districts can free more dollars to invest in incremental compensation for contribution and leadership when they allow the salary scale to top out earlier in a teacher's career.

Consider Changing Salary Increments for Additional Credits or Years

ERS (2010) suggests considering a reduction, phase-out, or complete removal of salary increments for additional credits or degrees. This recommendation is based on the demonstrated tenuous correlation between teaching effectiveness and educational attainment beyond a bachelor's degree.

Districts can also consider reallocating funds by not increasing salaries based upon experience alone, by limiting or eliminating experience-based steps on the salary schedule, or even freezing progress up the steps. For example, the Cincinnati Public Schools system freezes increases between the 17-year step and the 21-year step. A teacher remains at the 17-year step for five years, and then receives a larger salary increase of \$2,577.62 at the 22-year step to reach the \$65,456.62 maximum salary level.



Hassel and Hassel (2009) provide further examples of redeploying existing resources to fund teacher pay reforms, including:

- **Small changes.** If a system wanted to pay the top 50 percent of teachers an average of \$3,000 more, with the very top teachers earning \$6,000 more, then a system could fund this initiative by reducing the post-five-year experience premiums by 10 percent and the advanced degree premiums by 20 percent.
- **Larger changes.** If a system wanted to pay the top 50 percent of teachers an average of \$13,000 more, with the very top teachers earning \$20,000 more, then a system could reduce the post-five-year experience premiums by 50 percent and the advanced degree premiums by 80 percent.

According to DeGrow (2013) and the Douglas County Public Schools website, the Douglas County School District was able to fund its market-based pay plan by taking money from easy-to-staff areas and giving it to hard-to-staff areas to provide pay supplements. Prior reforms in the district were supported by such efforts as:

- reducing administrative costs by \$12 million from 2009 to 2013;
- ending the traditional salary schedule in 2012-2013;
- reducing the costs associated with the collective bargaining agreement (which ended in June 2012), totaling \$1.3 million over a five-year period;
- phasing out the extended service severance benefits for departing teachers with 15+ years of service, which resulted in savings of an estimated \$2 million; and
- phasing out automatic longevity pay.

According to DeGrow (2013), the Douglas County Board of Education takes a fiscally conservative approach by saving an additional four percent of annual general fund spending beyond the constitutional requirement. This four percent reserve translated into \$17million in FY 2012. This policy has earned the district an AA+ bond rating, which has yielded considerable savings through lower debt financing. In the 2011-2012 school year, the district collected \$8,582 in tax revenue for each full-time student, with about \$6,215 of that coming in as per pupil revenue through the state's School Finance Act. In 2012-2013, per pupil spending was \$6,218. Two years later (2013-2014), the district's per pupil revenue was \$6,386 (DeGrow, 2013).



Consider Incremental Increases in Class Sizes

A fourth strategy for redeploying resources that some policy organizations have recommended involves incremental increases in class sizes or targeting smaller class sizes to the grades where class sizes seem to matter most (K-3) or to at-risk students. Limiting staffing levels enables a school district to reallocate resources to staff salaries; however, this should be done with consideration of how important class size is to teacher retention and teacher effectiveness in the district. As one example, the Guilford County, North Carolina district generated \$2 million for its performance pay plan by increasing class sizes by one student in certain mathematics classes (Schuermann, Archibald, Kluender, & Ptak, 2011). The Equity Project charter school in New York City manages to pay teacher salaries of \$125,000-\$140,000, plus bonuses, and achieve budget surpluses of \$700,000-\$1,000,000 per year.

Consider Suggestions from Public Impact's Opportunity Culture

The fifth resource redeployment strategy emerges from Public Impact's Opportunity Culture. In an Opportunity Culture, schools redesign traditional classrooms and teaching roles to extend the reach of excellent teachers, directly and through their leadership of teaching teams, for more pay, within budget. The career opportunities of teachers depend upon their excellence, leadership, and student impact. Advancement allows more pay and greater reach, which can help attract and retain excellent teachers over time. Public Impact (2013) suggests that there are six ways to increase teacher pay using an Opportunity Culture strategy. These include:

- **Replace a team-teaching position with a paraprofessional.** The replacement saves teachers time and enables them to collaborate during school hours. Paraprofessionals can do the team's administrative paperwork and routine instructional tasks, such as grading. They can supervise digital learning and off-line practice of skills by students. This reduces the numbers of needed teachers without decreasing the instructional time students have with teachers. The difference between paraprofessional and teacher pay allows teachers to extend their reach to more students for more pay.
- **Offer some team-teaching roles with shorter work hours and proportionally lower pay.** Opportunity Culture suggests constructing teams with roles that allow part-time or limited hours. For example, multi-classroom leadership allows some



team teachers to focus on work, such as teaching small groups of students, grading, etc., that can be done in a shorter work week.

- **Increase class sizes slightly (within limits) but maintain instructional group sizes smaller or on par.** When some or all of a school's teachers teach even slightly larger classes, it requires fewer teachers overall and frees up funds.
- **Shift non-classroom instructional specialists back into classes in higher-paid "reach" roles.** When excellent teachers and their teams reach more students successfully, fewer students may need specialists to supplement in-class differentiation. Public Impact suggests that shifting specialists to formal team leadership roles enhances their authority, accountability for student outcomes, pay, and impact on their teaching teammates' work.
- **Reallocate other spending better used to raise teacher pay.** For example, many districts spend large sums on professional development that could be used to enhance the pay of teachers who take full responsibility for the student outcomes and development of whole teams of teachers (i.e., multi-classroom leaders).
- **Reduce new facilities costs by constructing fewer walls for fewer, larger rooms.** For example, digital labs and combined digital/face-to-face classrooms can be larger.

Repackaging Federal and State Categorical Aid Programs

Many TIF grantees accessed federal programs to fund portions of their teacher compensation reforms (Schuermann et al., 2011). For example, under the No Child Left Behind Act (the reauthorization of the Elementary and Secondary Education Act), there are several possibilities for using federal funding programs to address teacher compensation, particularly under Title II.



Title II. Preparing, Training, and Recruiting High Quality Teachers and Principals

Parts A and B of Title II identify authorized uses of federal funds for the compensation of teachers and principals.

Part A. Teacher and Principal Training and Recruitment Fund

According to the U.S. Department of Education's (2006) non-regulatory guidance, two of the 18 ways in which states may use their state-level activity funds from Part A specifically mention the development of new forms of teacher compensation (Guthrie & Prince, 2008). The non-regulatory guidance identifies the following:

- "Developing, or assisting LEAs in developing merit-based performance systems and strategies that provide differential and bonus pay for teachers in high-need academic subjects and for teachers in high-poverty areas" (p. 12).
- "Developing, or assisting LEAs in developing, teacher advancement initiatives that promote professional growth and that emphasize multiple career paths and pay differentiation" (p. 12).

However, it should be noted that these funds total less than 2.5 percent of the state's total allocation under Title II, Part A. The vast majority of Title II-A funds goes to LEAs, rather than states, and four of the nine ways in which LEAs may use these funds specifically mention educator compensation reforms (Guthrie & Prince, 2008). The non-regulatory guidance identifies the following:

1. "Developing and implementing strategies and activities to recruit, hire, and retain highly qualified teachers and principals. These strategies may include (a) providing monetary incentives such as scholarships, signing bonuses, or differential pay for teachers in academic subjects or schools in which the LEA has shortages; (b) reducing class size; (c) recruiting teachers to teach special needs children, including students with disabilities; and (d) recruiting qualified paraprofessionals and teachers from populations underrepresented in the teaching profession, and providing those paraprofessionals with alternate routes to obtaining teacher certification." (pp. 27-28)
2. "Developing and implementing initiatives to promote retention of highly qualified teachers and principals, particularly in schools with a high percentage of low-



achieving students, including...financial incentives to retain teachers and principals with a record of helping students to achieve academic success.” (p. 29)

3. “Carrying out programs and activities that are designed to improve the quality of the teaching force, such as...merit pay programs.” (pp. 29-30)
4. “Carrying out teacher advancement initiatives that promote professional growth and emphasize multiple career paths (such as paths to becoming a mentor teacher, career teacher, or exemplary teacher) and pay differentiation.” (p. 30)

Part B: Mathematics and Science Partnerships

Title II Part B funds may be used for the following authorized activities to recruit STEM teachers: Section 2202 (c) (4)—Recruiting mathematics, engineering, and science majors to teaching through the use of:

- (A) signing and performance incentives that are linked to activities proven effective in retaining teachers, for individuals with demonstrated professional experience in mathematics, engineering, or science;
- (B) stipends provided to mathematics and science teachers for certification through alternative routes;
- (C) scholarships for teachers to pursue advanced course work in mathematics, engineering, or science; and
- (D) other programs that the state educational agency determines to be effective in recruiting and retaining individuals with strong mathematics, engineering, or science backgrounds.

Title VI. Part B Rural Education Initiative

Program funds may be used for many of same purposes as Title I-A and Title II-A.



Redirecting Future Resources or Expenditures

The *TDOE's Differentiated Pay Resource Guide* (2013) suggests that districts may want to determine how to allocate any future state or local increase. The options include:

- Apply 100 percent of future increases to fund the district's salary schedule.
- Apply a particular percentage of future increases to the salary schedule and reinvest the remaining percentage in other investments.
- Apply 100 percent of future increase to other compensation investments.

Fermanich (2013) recommends that districts target an increasing proportion of new revenues toward performance-based compensation rather than toward increasing educator salary and benefits on the single salary schedule. He suggests that this could be accomplished by targeting an amount to be redirected and adjusting the percentage increases for additional experience steps or educational attainment lanes until the savings target is reached. Another possibility is that districts set a goal of reducing teacher turnover rates by half, which could produce annual savings.

Seeking Philanthropic and/or Corporate Support

Across the country, districts have sought and obtained philanthropic and corporate support for teacher compensation reform. There are a number of national foundations that have declared teacher compensation reform as a funding priority. Among these are:

- the Bill & Melinda Gates Foundation,
- the Broad Foundation,
- the Joyce Foundation,
- the Milken Family Foundation, and
- the Walton Family Foundation.

The grants may be targeted to certain geographic areas, states, and/or districts (Guthrie & Prince, 2008).

Tennessee Examples

For example, in Tennessee, Memphis School District received a \$20 million grant from the Bill & Melinda Gates Foundation in 2009 (Wesson, 2013). In addition, Memphis received



a supplemental grant of \$20 million from local businesses and foundations to fund its multi-year Teacher Effectiveness Initiative (Wesson, 2013). The Milken Family Foundation is supporting the implementation of the Teacher Advancement Program in Knox County. In 2002, the mayor of Chattanooga developed the support of local businesses by engaging 13 business leaders on a committee that designed pay incentives for selected high-need schools (City of Chattanooga, 2002).

Other Examples of Corporate Support for Teacher Compensation Reform

Guilford County in North Carolina formed a business-education partnership with the University of North Carolina at Greensboro and Action Greensboro, a coalition of local foundations and businesses, to pay for its bonus compensation program (Guthrie & Prince, 2008). The partners provided a \$2 million grant to the district (Guthrie & Prince, 2008).

The New York City Board of Education, the New York Partnership, and the Chamber of Commerce organized to create a performance-based bonus compensation program, Breakthrough for Learning, in the late 1990s (Guthrie & Prince, 2008).

Examples of business support for higher teacher compensation in Jacksonville, Florida, are noted above in Section VI.

Obtaining Additional Public Funding

A number of states and districts have sought to fund teacher compensation reform by increasing general fund revenues through increases in taxes or a locally generated categorical aid revenue increase. For example, Arizona approved a half penny sales increase, mandating that a major portion could only be used if local districts designed new performance pay structures (Odden & Wallace, 2007).

The best example of the use of a tax levy to support a compensation system comes from Denver Public Schools (Schuermann et al., 2011). This was the result of a multi-year intense public relations and media campaign to persuade taxpayers (Guthrie & Prince, 2008). In November 2005, Denver voters approved an increase in the annual mill levy, which raises an estimated \$25 million, adjusted for inflation, to fund its compensation system, ProComp. The money raised is placed in a trust fund to pay ProComp incentives and related expenses. The system's oversight committee, the teachers union, and community representatives are charged with ensuring its long-term financial viability



(Denver Public Schools, 2013). Guthrie and Prince (2008) suggest that states and districts plan early if they pursue this strategy, because it may require multiple attempts.

The example of collaboration between the district and local Chamber of Commerce in Austin, Texas, noted in Section VI, also was generated by the district's request for a tax levy to support more competitive teacher compensation.

Applying for Discretionary Federal Grants

Two major discretionary federal grants that have provided funds for teacher compensation reform are Race to The Top and TIF grants. Tennessee is currently a recipient of both grants.

Tennessee was one of the first states to receive the Race to the Top grant in 2010. Through the grant, Tennessee created (1) the Competitive Supplemental Fund, to support the planning of compensation models by districts receiving small First to the Top local funding awards, and (2) the Innovation Acceleration Fund, to support the adoption and implementation of alternative compensation structures by districts. (See Section III for more details.)

TDOE received a five-year TIF grant in 2010 to support performance-based compensation systems for teachers and principals in high-needs schools in fourteen districts. In 2012, TDOE received another TIF grant to support a performance educator evaluation system in three rural districts. In addition, the National Institute for Excellence in Teaching (NIET) received a 2012 TIF grant which is currently funding the implementation of the Teacher Advancement Program in Athens City and Morgan City.

Example of Coordination of Funding Sources

The Denver Public Schools Professional Compensation System included the following funding sources for different stages of development and implementation:

Table 9.***Funding Sources for Different Stages of Development and Implementation***

Stage	Funding Source	Amount of Funds
Research & Development	Rose Community Foundation	\$2.5 million
	Broad Foundation	\$1.2 million
	Daniels Fund	\$500,000
Transition & Implementation	Rose Community Foundation	\$1 million
	Broad Foundation	\$620,000
	Daniels Fund	\$500,000
Long-term Sustainability	Denver Mill Tax Levy	\$25 million annually

Source: Palumbo (2007). Note: Denver Public Schools also received funding from the Denver Foundation, the Donnell-Kay Foundation, the Strum Family Foundation, the Phillips Family Foundation, and the Piton Foundation (Palumbo, 2007).

In addition, Denver Public Schools received two federally funded TIF grants, the first in 2006 for \$22.6 million for five years, and the second in 2012 for \$28.5 million.

Planning for Financially Sustainable Teacher Compensation Reforms

As noted above in Section VI, many teacher compensation reform programs have not lasted, in part due to their high costs. It is therefore critically important to think through the immediate and long-term financial implications, and how they will be addressed, at the start of a compensation reform initiative. One example of a state's approach to creating a financially sustainable teacher compensation reform is Ohio's TIF grant (Ohio Department of Education, 2010).

The U.S. Department of Education awarded Ohio Department of Education and its partner, Battelle for Kids, a second TIF grant in 2010. The grant required districts to meet matching funds goals starting in Year 3 of the grant, meaning that the district must cover an increasing



share of the award program, either with local funds, other non-TIF funding sources, or in-kind matches. The tenets of Ohio's TIF sustainability plan include:

- Compile financial information on funds available to LEAs through current state and federal programs and then consider creative and optional ways to re-allocate resources.
- Create a group of knowledgeable and interested business executives who will provide counsel on entrepreneurial approaches to LEA operations.
- Seek foundation and corporate support for the LEAs.
- Expand the capacities of the regional Educational Service Centers to help embed knowledge and skills related to performance-based compensation systems into the ongoing LEA operating procedures.

Each participating Ohio district formed a local sustainability workgroup and developed a sustainability plan as well (refer to Ohio TIF grant website <http://portal.battelleforkids.org/OAC/tif/ohio-tif-home>).

Other TIF grantees also have developed sustainability plans that could be used as models.

Summary

This section first identified key questions to consider when forecasting costs and financial planning for differentiated compensation. Then it briefly described six strategies used in Tennessee and other states and districts to fund differentiated teacher compensation reform. Finally, it summarized one state's plans for financially sustaining teacher compensation reform.

Again, these approaches are not supported by research at present. It may be too early to see which plans are sustainable and effective in achieving teacher supply and demand goals. But it is important to reflect on historical efforts and present-day innovators, their advantages and disadvantages, and to consider sustainability, unintended consequences, and ways to ensure success before launching a new compensation initiative. Stakeholder engagement can be useful in doing so.



Effective Communication and Stakeholder Engagement in Compensation Reform

Engaging stakeholders serves two purposes. First, the successful implementation of any changes in teacher compensation requires that stakeholders have an accurate understanding of how the changes work (Max & Koppich, 2007). Stakeholders are more likely to support changes that are transparent and understandable, particularly to teachers (Max & Koppich, 2007). Second, stakeholder engagement can uncover potential unintended consequences and implementation challenges before they become serious and can provide insights about how to strengthen the new initiative (Behrstock-Sherratt, Rizzolo, Laine, & Friedman, 2013).

Strategies for Effective Stakeholder Communication and Engagement

One of the key challenges faced by the TIF grantees is securing and maintaining public and educator engagement and support in reforming teacher compensation. Several studies/reports by TIF grantees have identified key strategies and/or lessons learned in addressing challenges (e.g., Koppich, 2010; Raue, MacAullum, & Ristow, 2008). Some of the lessons learned follow.

Develop a comprehensive communication plan.

Any educator effectiveness reform should be accompanied by a comprehensive communication plan. The communication plan includes purposes, timelines, targeted, multiple strategies for stakeholder engagement and understanding, detailing the content, methods, responsibilities, and feedback mechanisms for the compensation program (Milanowski, Heneman, & Graham, 2012). The plan should include communication about:

- the reasons for changes in teacher compensation;
- the rationale for major new features;
- the mechanics of how the changes will determine pay increases;
- how current educators will transition to the changes; and
- what will happen to each individual teacher's pay, and how can each individual progress under the changes.



Communication plans should include different forms of communication with different levels of detail required for buy-in and support from multiple audiences (Koppich, 2010). These may include:

- monthly newsletters;
- standing agenda items for program updates at relevant meetings;
- a dedicated website to provide consistent, ongoing compensation information; and
- establishing good working relationships with local media to ensure that coverage is accurate and appropriate.

Reforms at the state level (Raue et al., 2008) should also require participating LEAs to develop and implement communication plans that:

- inform and engage classroom teachers with program features and opportunities to be involved in and benefit from the compensation program, and
- inform the public of the compensation program's highlights and successes.

Austin (Texas), South Carolina, and other TIF grantees have created comprehensive communication plans.

Other communication strategies may include employing a communications consultant and establishing school-level steering committees that develop communication plans with specific activities and timelines (Witham, McKithen, & Scott, 2012).

Identify internal and external stakeholders for communication and engagement efforts.

Communication efforts should be two-way; in other words, they should involve authentic engagement of key stakeholder groups. This may include:

- engaging internal stakeholders from Day 1 for feedback on the design of teacher compensation changes (Max & Koppich, 2007);
- using broad-based steering committees and advisory boards with task forces that meaningfully involve key stakeholders; and
- conducting surveys of educators to ascertain their views of the compensation program, especially what they understand about it, where they lack sufficient understanding, and how to enhance buy-in as well as inform program decisions (Witham et al., 2012).



To provide a snapshot of state-level efforts to reach out and communicate with stakeholders, the National Comprehensive Center for Teacher Quality (the predecessor of the Center on Great Teachers and Leaders) reviewed the communication and engagement efforts by 24 states concerning educator evaluation, and found the following strategies in place:

- **Websites.** All the states reviewed maintain a website related to the evaluation reforms.
- **Advisory committees.** Most states (92 percent) have a state-level advisory committee that includes stakeholders as members.
- **News or social media.** Only a handful of states have focused on news media (press conferences and news articles) or social media (13 percent); however, slightly fewer than half (42 percent) produce press releases highlighting their reforms.
- **Surveys.** Fewer than half of the states reviewed (42 percent) used surveys (usually online) to collect stakeholder views.
- **Guidance and training material.** Less than half of the states reviewed (42 percent) provided guidance, training materials, and FAQ documents online.
- **Forums.** Less than half (42 percent) hosted a series of regional forums to introduce reforms and/or hear stakeholders' perspectives.
- **Presentations.** SEAs and state-level committees used webinars or in-person presentations to LEAs, professional associations, teachers unions, or other stakeholder groups slightly less frequently (38 percent).
- **Online video or communication.** One third of states used additional online communication methods such as video or periodic e-newsletters to communicate information to stakeholders.
- **Focus groups.** Focus groups are the least utilized in-person form of engagement, with 33 percent of states selecting this option as one means of gathering stakeholder views (Behrstock-Sherratt, Biggers, & Feters, 2012).

Consideration of these types of communication and engagement strategies are a useful starting point for teacher compensation reform as well. Additional strategies are provided for states and districts in the Reform Support Network resource entitled *Engaging Educators: A Reform Support Network Guide*:

<http://www2.ed.gov/about/inits/ed/implementation-support-unit/tech-assist/engaging-educators.pdf>



Summary

This section outlined elements of stakeholder communication and engagement that states and districts have learned are important in implementing new teacher compensation policies. It also outlined some common state communication and engagement approaches to teacher evaluation reform, which may be extended in the development and implementation of teacher compensation reform. However, no communication or engagement strategy will fully succeed if a policy is not thoughtfully designed. The following section outlines an approach to engaging teachers more widely across Tennessee or across specific districts to think through a meaningful and effective design for market-based teacher pay that will be supported by (most) teachers, will address teacher shortage problems without creating unintended new problems, and will be financially sustainable for the long-term.

What role might teacher voice groups play in reforming teacher compensation in Tennessee?

Over the past several years, current and former teachers in collaboration with nonprofit leaders have established “teacher voice groups,” nonprofit organizations devoted to helping teachers inform public policy. Among these groups are: Hope Street Group, America Achieves, Teach Plus, the National Network of State Teachers of the Year, and VIVA Teachers, all of which have members in Tennessee. These teacher voice groups have been helpful to states and districts in gathering feedback about the design and implementation of teacher evaluations (Reform Support Network, n.d.). They also have sought to elevate teaching to a more dynamic, influential profession by creating an authentic voice for teachers as leaders of new education policies, thereby aiming to improve teacher recruitment, retention, and morale.

The Center on American Progress has profiled these teacher voice organizations:

Table 10.

Characteristics of Teacher Voice Organizations

Teacher Voice Organization	Members and Location	Unique Approach
Teach Plus	12,000+ in Boston, Chicago, Indianapolis, Los Angeles, Memphis, and Washington, D.C. (Note: Teach Plus began in Memphis)	Focuses on second stage (years 3–10) teachers who want to continue classroom teaching while also expanding their impact as leaders in their schools and in national, state, and district policy
VIVA Teachers (Voices, Ideas, Vision, Action)	3,500 in Arizona, Colorado, Florida, Iowa, Illinois, Massachusetts, North Carolina, New Jersey, New York, Tennessee, and Texas	Online organization that uses technology as an organizing tool for teachers to participate in a virtual “Ideas Exchange”

Teacher Voice Organization	Members and Location	Unique Approach
Center for Teaching Quality	2,000 in Colorado, Florida, Illinois, Washington, Kentucky, and virtually	A virtual “Collaboratory” provides space for conversation between educators and non-educators
National Network of State Teachers of the Year	700+ in every state	Provides a hub for State Teachers of the Year to remain involved in policy after their year of recognition

Source: Pennington (2013)

America Achieves is a newer teacher voice group with a presence in Tennessee. America Achieves helps communities and states leverage policy, practice, and leadership to build high-quality educational systems and prepare each young person for success in careers, college, and citizenship. They convene parents, state education leaders, and teacher fellows. Their teacher fellows engage in various skills and leadership development trainings to enable them to effectively partake in and lead policy design and implementation.

The longest-standing “teacher voice” group, the teachers’ unions, of course are key stakeholders for engagement in new policy. The Tennessee Education Agency (TEA) recently created a bill that reinstates a minimum salary schedule based on experience and advanced degrees (HB1381/SB1856) that passed in both the Tennessee Senate and House with unanimous votes (<http://www.teateachers.org/about-tea>).

To promote participation of teachers in reform efforts, the Reform Support Network (n.d.) recommends that SEAs, LEAs, and unions identify a cadre of teachers who want to be more involved in the development and implementation of new systems. Listening to teachers when it comes to teacher policy has received growing support, including from Kentucky’s Commissioner of Education (Holliday, 2014). One model for broad engagement of these teacher voice groups is *Everyone at the Table*, which offers an approach for facilitating ongoing productive and solutions-oriented dialogue among larger groups of teachers’ complex and challenging policy topics, such as teacher compensation.



Specifically, the *Everyone at the Table* model relies on dialogues, led by trained teacher leader moderators, using an approach called choicework. Choicework presents key tradeoffs inherent in policy options—typically depicted in three or four practical realistic scenarios that are discussed in a focus group style context. Considering these choices moves the conversation away from magic bullet or “either/or” thinking and toward creative solutions and compromises while helping all participants understand each other’s underlying values and rationales.

If skillfully moderated, this model can engender productive, solutions-oriented dialogue that engages teachers even in controversial policy, to lead to stronger policy design, implementation, and sustainability that is worth the extra time and effort required (Behrstock-Sherratt et al., 2013). For more details, see www.EveryoneAtTheTable.org.

Summary

There are several active teacher groups in Tennessee with a specific interest in engaging in policy dialogue, policy design, and policy implementation, which have a track record of developing thoughtful approaches to challenging problems. Partnering with one, several, or all of these organizations may hold potential for identifying viable, sustainable teacher compensation policies. This section provided a brief summary of teacher voice organizations in the state and introduced a model for effective teacher engagement in policy.



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Appendix: Glossary of Terms

The glossary of terms below is taken directly from literature on teacher compensation reform. One important exception, however, is “market-based pay”; because the term is new to the education field, the definition was developed based on definitions used in the business sector.

Alternative compensation. A salary system in which employee base pay increases are determined by factors other than educational attainment and years of service. Such factors differ from district to district but could include such components as evaluation scores, value-added, peer evaluation, additional duties, parent/student surveys, working in a hard-to-staff subject/building, or skill attainment (Douglas, 2012).

Alternative salary schedule. A salary schedule that uses a component, often a performance measure, in addition to or in place of education and experience to determine base pay. For example, a schedule that determines the amount of an educator’s yearly base pay increase on the basis of his or her evaluation score is an alternative salary schedule. Alternative salary schedules are subject to State Board of Education approval (Tennessee Department of Education, 2013, p. 6).

Base pay (base salary). An individual’s salary, excluding any additional compensation in the form of bonuses, stipends, or supplements for additional work or responsibilities (Tennessee Department of Education, 2013).

Basic Education Program (BEP). A Tennessee funding formula through which state education dollars are generated and distributed to Tennessee public schools (Tennessee State Board of Education, 2014).

Bonus/stipend. Additional compensation for a pre-defined set of criteria. Bonus and stipend pay are awarded in addition to or “on top of” an individual’s base pay. Bonuses/stipends are one-time payments awarded for a specific role, additional responsibility, or achievement of particular criteria. Bonuses and stipends are not part of base salary and do not become a reoccurring part of an individual’s compensation. (Tennessee Department of Education, 2013, p. 6).

Career ladder. A system of formal teacher leadership (e.g., mentor, instructional specialist) and pay through which teachers achieve more highly compensated positions as they progress from “novice” to “advanced” practitioner. Teachers “climb” the rungs of a



career ladder as they grow in experience and take on additional duties and responsibilities (National Education Association, 2008).

Competitive Supplemental Funds (CSF grants). Tennessee Department of Education's discretionary grants to districts receiving small First to the Top awards to support the planning of compensation models (Woods & Clark, 2010).

Differential or differentiated pay. A general term used to describe a form of pay that differs from the single-salary schedule, designated for teachers who accept assignments in hard-to-staff schools and/or subject areas (Rowland & Potemski, 2009).

Innovation Acceleration Fund (IAF grants). Tennessee Department of Education's discretionary grants to support a district's adoption and implementation of alternative compensation systems. The IAF grants were four-year grants to support districts in the design and implementation of sustainable compensation systems based on alternative salary schedules and rewards for teachers who increase student achievement levels (Wesson, 2013).

Market-based pay. The alignment of teacher salaries with the salaries available in other labor markets. It suggests that the salaries offered by competing employers should be a central consideration when setting pay levels for teachers as a profession or within particular subject or geographic areas.

Merit-based models. Models that provide bonuses or pay increases to teachers based on their impact on student achievement and their records of success (Cour, 2009).

Opt-in/opt-out provision. Individuals may choose whether to participate in a program. This provision is most often associated with alternative salary schedules and is not required (Tennessee Department of Education, 2013, p. 6).

Performance pay, pay for performance, or performance-based compensation.

Programs that base pay on either teacher performance (evaluation or professional development) or student performance indicators (value-added or gains scores on standardized tests, objective evaluations of student performance, or other valid and reliable assessments of student performance) (Roland & Potemski, 2009).

Single salary schedule. See traditional salary schedule below.

STEM. Science, technology, engineering, and mathematics.



Teacher Advancement Program (TAP). The Teacher Advancement Program of the National Institute for Excellence in Teaching is a system designed to provide teachers with a career pathway. In most TAP schools, the basic salary schedule remains in place. Salary augmentations are given to master and mentor teachers for their increased levels of responsibility and work. TAP recommends augmentations of \$5,000-\$12,000 for mentor teachers and \$10,000-\$20,000 for master teachers, depending on school and district budgets. All TAP teachers are eligible for performance bonuses based upon their professional practices—as assessed by multiple, certified TAP evaluators—as well as their students' academic achievements and the school's overall academic progress during the school year (National Institute for Excellence in Teaching, 2014).

Teacher Incentive Fund (TIF) grants. The purpose of the federally funded Teacher Incentive Funds grant is to provide financial support to develop and implement sustainable performance-based compensation systems for teachers, principals, and other personnel in high-need schools to increase educator effectiveness and student achievement in those schools (U.S. Department of Education, 2012).

Teacher incentives or incentive pay. A general term for providing teachers with additional compensation beyond the traditional single-salary schedule. Incentive pay can be based on a variety of indicators and is often used as a tool to recruit teachers for particular schools or subject areas (Rowland & Potemski, 2009).

Traditional salary schedule (or step and lane schedule). A salary schedule that uses years of experience and education exclusively to determine an educator's increases in base pay. Traditional schedules may follow the same structure as the state minimum salary schedule. Salary schedules that modify the amount of the step increases given for experience or change the structure of the education lanes may still be considered a traditional schedule as long as they meet or exceed the relevant state minimums (Tennessee Department of Education, 2013, p. 6).